

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

MICROSOFT CORPORATION,)	
)	
Plaintiff,)	C.A. No. 07-090 (SLR)
)	
v.)	
)	
ALCATEL-LUCENT ENTERPRISE and)	REDACTED -
GENESYS TELECOMMUNICATIONS)	PUBLIC VERSION
LABORATORIES, INC.,)	
)	
Defendants.)	

**DEFENDANT ALCATEL LUCENT ENTERPRISE'S REPLY BRIEF
IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT OF NON-
INFRINGEMENT AND INVALIDITY OF ALL ASSERTED CLAIMS OF
UNITED STATES PATENT NO. 6,421,439**

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INTRODUCTION AND SUMMARY OF ARGUMENT

Microsoft asserted infringement of the '439 patent against ALE in International Trade Commission ("ITC") proceedings.¹ On June 6, 2008 the ITC issued its final determination that that the accused ALE systems do not infringe the '439 patent and the asserted claims are invalid because they are anticipated by Chestnut.² Microsoft's infringement case (both before the ITC and here) hinges on its contention that a voice-over IP ("VoIP") phone call constitutes "activity of the user on the computer network." (Ex. 1 (Commission Decision (June 6, 2008)) at 20; *see also* Plaintiff Microsoft's Opposition To Defendant's MSJ Of Non-Infringement And Invalidity For U.S. Patent No. 6,421,439 ("Plaintiff's '439 Opposition Brief") (D.I. 189) at 22.) The ITC squarely rejected Microsoft's contention. In its Opinion, the ITC noted that "the prosecution history for the '439 patent indicates the claimed computer and telephone networks are significantly distinct." (Ex. 1 (Commission Decision (June 6, 2008)) at 11.) [REDACTED]

[REDACTED] (Id. (quoting Microsoft's expert, *see* Ex. 2 (Chang ITC Hrg Tr.) at 1024:12-14). The ITC concluded from the evidence that:

¹ As a result of the ITC determination, the parties agreed to defer summary judgment and claim construction briefing, and to have the June 30, 2008 hearing taken off calendar. (*See* D.I.181). They have also agreed to schedule a mediation with Magistrate Judge Thyng. (*Id.*) The parties acknowledge that these agreements will likely render the September 22, 2008 trial date infeasible.

² Microsoft claims that the ITC decision does not address all the asserted claims in this case. However, the ITC found that the accused systems did not directly infringe the '439 patent because the systems do not meet the claim limitation of "current activity of the user on the computer network." (Ex. 1 (Commission Decision (June 6, 2008)) at 20, 23.) All of the claims asserted by Microsoft in the instant case require call filtering based on "current activity of the user on the computer network." (Defendant ALE's Opening Brief In Support Of Its MSJ Of Non-Infringement and Invalidity Of U.S. Patent No. 6,421,439 ("ALE's '439 Opening Brief") (D.I. 160) at 14.)

“[A] phone call over a traditional computer network (*e.g.*, LAN) is considered a telephone call on a telephone network based on the data that is carried. Similarly, a VoIP phone call constitutes activity on the telephone network. Given the narrow claim construction that the prosecution history requires and the constructions of “telephone network” and “computer network” agreed upon by the parties’ experts, we determine that the proper claim construction of ‘current activity of the user on the computer network’ cannot include ‘engaged in a VoIP phone call.’” (*Id.* at 13.)

Having lost before one tribunal Microsoft does nothing more than reargue here the very same points it lost before the ITC. Microsoft argues that whether a VoIP soft phone call constitutes user activity on the computer network and whether the accused systems route calls according to user activity on the computer network when the user is engaged in a VoIP call, are questions of fact that preclude summary judgment on infringement. No factual disputes exist, however, as to how a VoIP call works or as to how the accused systems operate when the user is engaged in a VoIP call. The question here, as in most cases, is one of claim construction. Whether a VoIP call constitutes activity of the user on the computer network is purely a question of applying the claim construction to the undisputed facts and is therefore ripe for determination by this Court. Microsoft cannot stave off summary judgment by raising nonexistent fact issues.

Finally, Microsoft seeks to avoid summary judgment on invalidity by asserting ALE presented its arguments in broad strokes. It is hard to believe that after a full trial before the ITC on this issue, numerous rounds of briefing (including assertions of invalidity by the ITC staff attorney) and an invalidity decision by the full Trade Commission that Microsoft acts as if this argument is not fully developed with sufficient specificity. Microsoft throws up a host of phantom issues – such as whether “memory” is “contained within a computer network,” or whether a computer telephony interface (CTI) constitutes a computer network access port. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 33-40.) However, none of these issues creates a

dispute of material fact. Microsoft again makes the same arguments it made to the Commission in the ITC action in response to the invalidity challenge based on Chestnut. The Commission rejected each of these arguments, determining that clear and convincing evidence established that Chestnut invalidated all claims of the '439 patent asserted by Microsoft in the ITC action.

ARGUMENT

A. SUMMARY JUDGMENT OF NON-INFRINGEMENT OF THE '439 PATENT SHOULD BE GRANTED

1. There Are No Disputed Facts With Regard To Non-Infringement

Microsoft asserts there are questions of fact as to whether a VoIP phone call constitutes "current activity of the user *on the computer network*."³ There are, however, no disputed facts regarding the functionality of the accused systems or VoIP functionality in general. Indeed, there is no dispute that a VoIP soft phone program is a telephonic application that runs on a computer and enables one person to communicate telephonically with another. (Declaration of William H. Beckmann In Support Of Microsoft's Opposition to Defendant's '439 SJ Motion ("Beckmann Decl.") (D.I. 190) at ¶ 14-15.) There is also no dispute that the accused systems route incoming calls based on whether the user's telephone extension is on-hook or off-hook, regardless of whether the user is on a traditional phone, a hard phone or a soft phone. (*Id.* at ¶ 27, *see also* Ex. 3 (Leroy ITC Hrg Tr.) at 1104:17-1105:3.) Microsoft simply contends (without analysis) that because a soft phone application runs on a computer and the computer is connected to a computer network, talking on a soft phone must by definition constitute activity of the user

³ ALE does not dispute that the accused systems route incoming calls based on call processing rules, such as "do not disturb." However, applying the language of the '439 patent, such routing is not based on activity of the user *on the computer network* as required by all claims. In addition, the call processing rules, such as "do not disturb" were expressly disclaimed by the applicant during the prosecution of the '439 patent and therefore do not infringe.

on the computer network. (See D.I. 190 (Beckmann Decl.) at ¶ 20 (“While acting as a telephone, the soft phone is also an application running on a computer on a computer network.”)) Of course, the flaw in Microsoft’s argument is that although a soft phone uses a computer platform to initiate a telephone network connection, the soft phone transmits telephony information from phone to phone (constituting activity on the telephone network), not digital data from computer to computer. Microsoft’s intentional confusion of infrastructure with functionality does not raise a genuine issue of material fact.

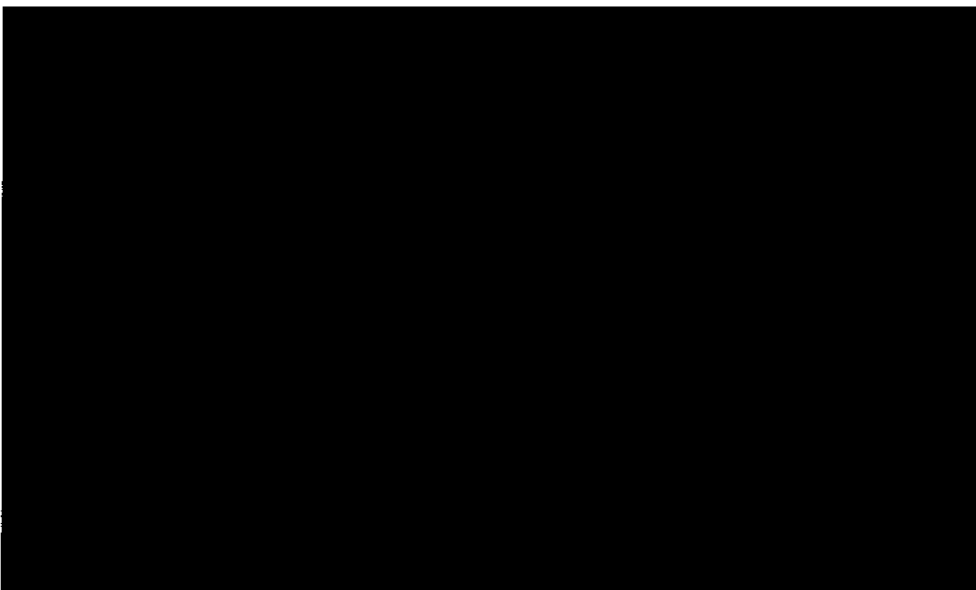
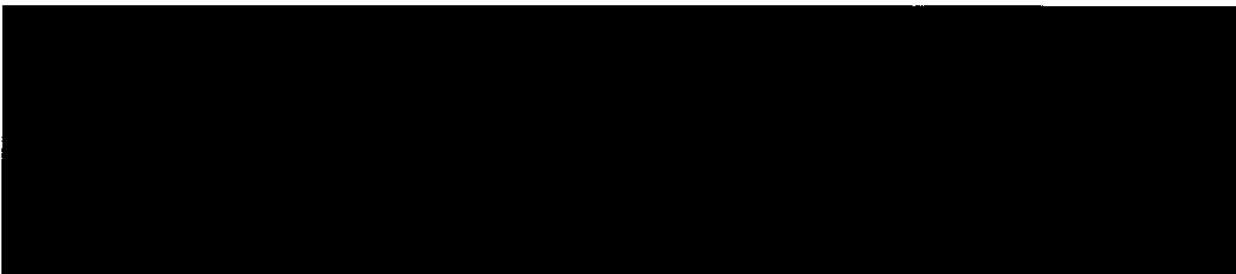
Thus, the only “dispute” for this summary judgment motion is whether the undisputed functionality of the accused systems meets the “current activity of the user *on the computer network*” limitation of the asserted claims. This is a question of law. As detailed below, because Microsoft raises no genuine issues of material fact on non-infringement, summary judgment is appropriate.

2. VoIP Soft Phones Do Not Infringe For The Same Reasons That Traditional Telephones Do Not Infringe

Microsoft admits that using the accused systems with traditional telephones does not infringe the ’439 patent, (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 22), but fails to distinguish between call routing in the accused systems with traditional telephones and call routing with VoIP soft phones. The accused OXE and OXO systems route incoming calls the same way, using the same mechanism, regardless of whether the user is using a VoIP soft phone or a traditional telephone. (Ex. 3 (Leroy ITC Hrg Tr.) at 1104:17-1105:3.) [REDACTED]

[REDACTED] (D.I. 190 (Beckmann Decl.) at ¶ 21, *see also* Ex. 4 (Beckmann Dep. Tr.) at 235:8-16.) Microsoft admits that this functionality does not infringe the ’439 patent when the user is

using a traditional telephone, but claims that the same functionality does infringe when the user is using a VoIP soft phone. (D.I. 189 at 22.)



(Ex. 5 (Hyde-Thomson ITC Hrg Tr.) at 1342:7-1343:11 (emphasis added); *see also* 1404:3-18, 1405:15-23.) Microsoft's expert in the ITC matter agreed that the state of the user's telephone when a user is engaged in a call on the soft phone is stored in the OXE PBX on the telephone network, not on the computer network.

MR. NELSON: CDX-51, please.

THE WITNESS: Sure.

Q. So here in your example, the state of the telephone as busy is

stored at the OXE server, correct?

A. That's correct.

(Ex. 2, Chang ITC Hrg Tr. at 1892:1-7, *see also* 1882:23-25 (“Q. So PBX is part of the telephone network? A. Correct.”)⁴

[REDACTED]

[REDACTED] This is precisely the basis for the Commission’s June 6, 2008 decision finding that the accused ALE systems do not infringe the ’439 patent: “In both accused systems, the call is routed based on the status of the user’s phone extension, thus leaving the claim limitation ‘current activity of the user on the computer network’ unsatisfied.” (Ex. 1 (Commission Decision (June 6, 2008)) at 23.)

a. The Accused Systems Do Not Route Incoming Calls According to “Soft Phone Activity”

[REDACTED]

[REDACTED] Microsoft attempts to obscure this fact by arguing that a user’s VoIP “soft phone activity” constitutes user activity on the computer network. (D.I. 189 (Plaintiff’s Opposition Brief) at 21.) Without any explanation of how the accused systems route incoming calls based on the alleged “soft phone activity”, Microsoft concludes that “[b]ecause a user’s soft phone activity constitutes user activity on the computer network, the OXE system is thus routing calls according to the user’s activity on the computer network.” The ’439 patent, however, requires filtering incoming calls “*according to* ... current activity of the user on the computer

⁴ Exhibit CDX-51 discussed in this excerpt is the slide that Microsoft’s expert used to demonstrate the basis for his opinion that the “current activity of the user on the computer network” limitation was met by the accused OXE system.

network” and not merely some type of computer activity unconnected to filtering incoming calls. (Ex. 6 (’439 patent) at 14:25-26, 16:10-11, 17:3-4, 18:15-17 (emphasis added).)

In its brief, Microsoft describes “soft phone activity” as using soft phone software applications, using keyboard and mouse inputs, sending control information, and digitizing and compressing voice information. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 14-18.)⁵

Regardless of whether there is any such “soft phone activity” on the user’s computer, it is irrelevant to the question at hand, because routing of calls when a user is engaged in a soft phone call does not occur as a result of any such activity. (Ex. 5 (Hyde-Thomson ITC Hrg Tr.) at 1342:7-1343:11). It is the state of the user’s telephone extension upon which routing is based in such a situation.

⁵ To support its “softphone activity” argument, Microsoft also cites to Dr. Beckmann’s declaration, which was submitted in support of Microsoft’s opposition brief. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 4-5, 10-11, 14, 16-21.) This declaration improperly goes beyond the opinions disclosed in his initial expert report, submitted on behalf of Microsoft on March 28, 2008. Dr. Beckmann’s initial report merely states that it is his opinion that the accused systems infringe the ’439 patent. (Ex. 7 (Beckmann Initial Report) at 31.) The entire bases for Dr. Beckmann’s infringement opinions are in an infringement chart attached as Exhibit E to his Initial Report. The infringement chart does not discuss “softphone activity” other than stating that “A user is active on the computer network, for example, when the user is on a VoIP softphone call using his computer.” (*Id.* at Ex. E at 4.) For example, the chart does not mention processing digital data into sound (as discussed in ¶ 17 of his declaration.) or running softphone applications using the computer resources (as discussed in ¶ 18 of his declaration.). (D.I. 190 (Beckmann Decl.) at ¶¶ 17-18.) Dr. Beckmann’s “new opinions” are an improper attempt to try and create an issue of fact where none exists and should be excluded from the Court’s consideration.

[REDACTED]

(D.I. 189 (Plaintiff's '439 Opposition Brief) at 21.) Microsoft argues that this testimony supports its contention that the accused OXE system process incoming calls based on a user's "soft phone activity." (*Id.*) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

(Ex. 3 (Leroy ITC Hrg. Tr.) at 1104:10-1105:14.) The evidence thus supports the conclusion that routing is based upon the state of the user's telephone extension and not any user activity on the computer network.

Based on this undisputed evidence, Microsoft's "soft phone activity" argument was explicitly rejected by the Commission in the related ITC matter:

"We disagree with Microsoft's contention that the 'computer activity' associated with a VoIP phone call, *e.g.*, using the soft phone software, digital compression and conversion of voice, transforms this call into activity on the computer network. This

alleged ‘computer activity’ (associated control signaling and digital processing) is present when any phone call is made over a computer network... We disagree with Microsoft’s contention that other activity that the user may be engaged in while on a VoIP phone call, such as checking email using the mouse or keyboard, satisfied the limitation ‘current activity of the user on the computer network’ since there is no record evidence that the OXE system⁶ routes calls to a user based on this additional user activity while engaged in a VoIP phone call.”

(Ex. 1 (Commission Decision (June 6, 2008)) at 22-23.) In Microsoft’s infringement scenario, the call is being routed because the user is on the phone (as recognized by standard telephone equipment) and not because of any “soft phone activity” on the user’s computer.

b. Microsoft’s “Simultaneous” Argument Conflicts With the Requirements of the Asserted Claims of the ’439 Patent

[REDACTED] (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 23, *see also* Ex. 4 (Beckmann Dep. Tr.) at 161:6-11.) This ignores that the asserted claims of the ’439 patent require a “telephone network” that is distinct from the “computer network.” As explained in the ITC Commission’s Decision, the applicant’s addition of “current activity of the user on the computer network” during the prosecution of the ’439 patent indicates that there must be a distinction between a user’s activity on the computer network and activity on the telephone network.

The prosecution history for the ’439 patent also indicates that the claimed computer and telephone networks are significantly distinct... Particularly, in response to a rejection based on a prior art reference (Brennan), the patentee stated ...

the current activity of the subscriber and/or user does *not* typically occur on the telephone network. Instead the current activity of the subscriber and/or the user usually occurs *on a computer network*.

⁶ The Commission also affirmed the ALJ’s initial determination that the OXO system did not infringe the ’439 patent. (Ex. 1 (Commission Decision (June 6, 2008)) at 23.)

The ability to process an incoming call on a telephone network according to activity on a computer network is not taught or suggested by Brennan. Id. (emphasis added).

Therefore, the prosecution history strongly indicates that the term “current activity of the user on the computer network,” which was specifically added as part of the amendment to overcome the PTO rejection based on Brennan, means something quite special and unique, viz., the ability to process an incoming call based on the user’s activity on the computer network, as opposed to activity on the telephone network.

(Ex. 1 (Commission Decision (June 6, 2008)) at 11-12; *see also* D.I. 160 (ALE’s ’439 Opening Brief) at 6-9.)

Microsoft argues that two networks can share physical infrastructure, but this is irrelevant to whether the same activity can simultaneously be activity on both networks. That argument, however, confuses infrastructure with function. [REDACTED]

[REDACTED]

[REDACTED] *see also* Ex. 1 (Commission Decision (June 6, 2008)) at 13.)

This is no different than computers using telephone network infrastructure to form a part of a computer network for communications between computers. The ’439 patent describes exactly such a configuration. For example, computers on the computer network use telephone lines (part of the telephone infrastructure) to communicate. (*See* Ex. 6 (’439 patent) at 6:52-54 (“The network link is a computer-to-computer connection that may simply use a telephone as the

physical layer to establish the network link.”).) Similarly, the soft phone is a telephone-to-telephone connection that simply uses the computer as a physical layer to establish the telephone network link. Not surprisingly, Microsoft’s “simultaneous” argument was explicitly rejected by the ITC, which concluded that “a phone call over a traditional computer network (*e.g.*, LAN) is considered a telephone call on a telephone network based on the data that is carried. *Similarly, a VoIP phone call constitutes activity on the telephone network.*” (Ex. 1 (Commission Decision (June 6, 2008)) at 13.)

c. The “Soft phone Activity” Identified by Microsoft Occurs on the Telephone Network, not the Computer Network.

Both parties agree that whether “activity” constitutes activity on the telephone network or on the computer network depends upon the type of data that is being carried on the network. (Joint Claim Chart (D.I. 150) at 2.) Microsoft’s proposed claim construction for the term “telephone network” is “network for carrying telephony information” and for the term “computer network” is “network for carrying digital data.” (*Id.*)

To the extent that Microsoft asserts that routing of the call when the user is engaged in a call on the soft phone is based upon the OXE system detecting the “soft phone activity” (which, as discussed above, it is not) such routing still could not be based on user activity on the computer network. Because such VoIP soft phone data is telephony information, the network upon which transfer of VoIP soft phone data takes place would necessarily be the telephone network, under both parties’ proposed constructions.⁷ Therefore, even if routing of calls was based upon the transfer of this data during a VoIP call (which is not the case), that would be

⁷ Similarly, the Commission noted that the “controller” as claimed by the ’439 patent, “receive[s] the incoming call” and therefore “necessarily includes receiving telephony information *where the received information may include non-voice data* such as call setup data (or signaling), and the claimed ‘controller,’ performing this recited function, *is still part of the telephone network.*” (Ex. 1 (Commission Decision (June 6, 2008)) at 12 (emphasis added).)

routing based upon activity on the telephone network, not the computer network.

3. Call Processing Rules Such As “Do Not Disturb” Do Not Satisfy The “Current Activity” Requirement Of The ’439 Patent

Microsoft also appears to argue that the accused systems route incoming calls based on the user setting a call processing rule to “do not disturb” or “in a meeting.” (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 21.) [REDACTED]

[REDACTED]

[REDACTED] (Ex. 5 (Hyde-Thomson ITC Hrg Tr.) at 1405.)

In addition, the call processing rules such as “in a meeting” and “do not disturb” rules were expressly disclaimed during the prosecution of the ’439 patent. (D.I. 160 (ALE’s ’439 Opening Brief) at 6-9.) Based on this evidence, the ITC found in its June 6, 2008 opinion: “All of OXE’s user-selected, incoming-call-processing states can be stored on the OTUC computer server but nevertheless relate only to the status of the user’s phone extension and not the status of the user on the computer network.” (Ex. 1 (Commission Decision (June 6, 2008)) at 21.)

4. Microsoft Has Failed To Satisfy Its Burden On Indirect Infringement

With respect to substantial non-infringing uses, Microsoft misstates ALE’s position. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 29 (“ALE seems to argue that because the OXE - one component of the accused system - can be used outside the system, then the entire system

must somehow have ‘substantial non-infringing uses.’’)) Microsoft has failed to meet its burden to show contributory infringement with respect to the OXE and OXO standalone switches (referred to as the Enterprise Switch and the Office Switch, respectively, in ALE’s Opening Brief) because it admits that the switches have substantial noninfringing uses and does not even contend that such switches sold without the accused OTUC or PIMphony software packages infringe. (D.I. 160 (ALE’s ’439 Opening Brief) at 19-20.) Therefore, Microsoft cannot show that the sale of the Enterprise Switch or the Office Switch, as standalone products, indirectly infringe any of the asserted claims of the ’439 patent.

Furthermore, Microsoft only accuses configurations of the OXE and OXO systems that include a VoIP soft phone. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 4, 10.) As Microsoft admits, configuration using traditional telephones as the user extensions do not infringe the ’439 patent. (*Id.* at 22.) Microsoft has failed to provide any evidence that either accused system has been implemented in the United States with VoIP soft phones as user extensions and cannot show direct infringement even under its allegations as a result. Therefore, summary judgment of no indirect infringement of the ’439 patent is proper.

B. SUMMARY JUDGMENT OF INVALIDITY OF THE ’439 PATENT SHOULD BE GRANTED

The Chestnut Patent (U.S. Patent No. 6,041,114) is prior art and anticipates each asserted claim of the ’439 patent. Microsoft’s arguments attempt to create ambiguity where none exists. ALE’s Opening Brief and Mr. Hyde-Thomson’s Declaration clearly and convincingly explain how the disclosure in the Chestnut patent anticipates each limitation of the asserted claims. (D.I. 160 (ALE’s ’439 Opening Brief) at 21-30, *see also* Declaration of Henry Hyde-Thomson In Support Of Motions For Summary Judgment (“Hyde-Thomson Decl.”) (D.I. 161) at ¶¶ 90-101.)

1. The Telecommute Server Disclosed in Chestnut Is On Both the Telephone Network And The Computer Network

Throughout its Opposition Brief, Microsoft claims that Chestnut does not disclose whether the telecommute server is on the computer network or on the telephone network. (*See* D.I. 189 at 33-34, 38-39.) The reality, as ALE has consistently explained, is that the telecommute server is part of both networks. (D.I. 160 (ALE's '439 Opening Brief) at 25 ("The management system disclosed in the Chestnut Patent includes a 'telecommute server' which is connected to a computer network integrated with a PBX connected to the telephone network"); *see also* Ex. 8 (ALE's Reply to Microsoft's Submission to the Commission) at 38.) Yet, in its Opposition Brief, Microsoft argues that the telecommute server must be on one network or the other. (D.I. 189 (Plaintiff's '439 Opposition Brief) at 33.) Microsoft's attempted line drawing exercise was explicitly rejected by the ITC.⁸

⁸ *See* Ex. 1 (Commission Decision (June 6, 2008)) at 26-27:

"[W]e find that Chestnut discloses that the telecommute server exists on both the telephone and computer networks.

The specification explains that the telecommute server straddles and connects the two networks: 'FIG. 1 shows the telecommute server 2 connected to a computer network 8 and a private telephone switch (private branch exchange (PBX)) 4 which in turn is connected to a Publicly Switched Telephone Network (PSTN) 6.' Chestnut patent, FIG. 1; col. 4, ll. 36-39. Also, the specification states that (1) '[t]he present invention closely integrates a company's LAN with its telephone network,' *id.* at col. 2, ll. 25-26; and (2) '[t]he present invention, referred to as a telecommute server, is a method for controlling call forwarding using a computer connected to a data network and a telephone network,' *id.* at col. 2, ll. 24-37."

2. Chestnut Discloses a “Controller”

As explained in ALE’s Opening Brief, the part of the telecommute server that receives the incoming calls satisfies the “controller” element of the ’439 patent. (D.I. 160 (ALE’s ’439 Opening Brief) at 28-29.)

Microsoft claims that ALE’s expert is ambiguous on this point. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 38 (“Mr. Hyde-Thomson argues first that the telecommute server is the controller, and then that the “private telephone switch” satisfies this limitation.”).) This is an inaccurate representation of Mr. Hyde-Thomson’s opinions. In his Declaration in support of Defendants’ Motions for Summary Judgment, Mr. Hyde-Thomson clearly explains that in his expert opinion, the “controller” element of the ’439 patent is satisfied by the telecommute server. (D.I. 161 (Hyde-Thomson Decl.) at ¶ 98.) Mr. Hyde-Thomson further explains that, using Microsoft’s erroneous interpretation of the word “receive,” his opinion is that the PBX (or a combination of the PBX and telecommute server) would satisfy the “controller” element. (*Id.* at ¶ 99.)

Microsoft attempts to create ambiguity where none exists, by arguing that it is unclear what portions of the telecommute server exist on the computer network and what portions exist on the telephone network. (D.I. 189 (Plaintiff’s ’439 Opposition Brief) at 38.) Again, Microsoft is engaging in an improper line-drawing exercise. As explained by Mr. Hyde-Thomson and as described in the Commission’s decision, the portion of the telecommute server that “intercepts incoming calls which would be forwarded to voice mail” and processes the call in accordance with the user-selectable criteria satisfies the “controller” requirement of the ’439 patent. (D.I. 161 (Hyde-Thomson Decl.) at ¶ 98, Ex. 1 (Commission Decision (June 6, 2008)) at 30-32 (“[A]lthough it does not use the exact words of the ’439 patent, we find that Chestnut provides sufficient disclosure that its telecommute server is essentially a call forwarding controller”).)

3. Chestnut Discloses a “Computer Network Access Port”

Microsoft claims that ALE only offers “vague references to CTI applications.” (D.I. 189 (Plaintiff’s ’439 Opposition Brief). at 36.) However, Mr. Hyde-Thomson clearly states in his declaration that “the CTI applications satisfy the computer network access port limitation.” (D.I. 161 (Hyde-Thomson Decl.) at ¶ 97.) CTI applications is simply a generic reference for computer telephony integration software which the Chestnut patent explains is a class of software for providing the type of computer network and telephone network integration at issue. (Ex. 9 (’114 patent) at 57.) [REDACTED]

[REDACTED] (Ex. 5 (Hyde-Thomson ITC Hrg Tr.) at 1667:22-1668:1.)

Microsoft claims that ALE (and the ITC) are making an “inherency” argument - that the computer network access port is inherently disclosed in the Chestnut patent. This is misstating both ALE’s position and the ITC’s findings. ALE, as discussed above, points to the CTI applications disclosed in the Chestnut patent as satisfying the “computer network access port” requirement. The Commission, in its opinion, explains that:

“The Chestnut patent also is directed towards improving on and providing access to computer telephony integration (‘CTI’) applications in the field of invention...

These CTI applications facilitate incoming and outgoing call handling and control, and are used to seamlessly interface the caller, called party, and information on a host computer for a variety of applications...



Although it does not use the exact words of the ’439 patent, we find that Chestnut provides sufficient disclosure, as supported by expert testimony, that its telecommute server serves as an interface between the telephone and computer networks so that one of ordinary skill in the art, together with his or her own knowledge, would understand that the Chestnut patent discloses the limitation

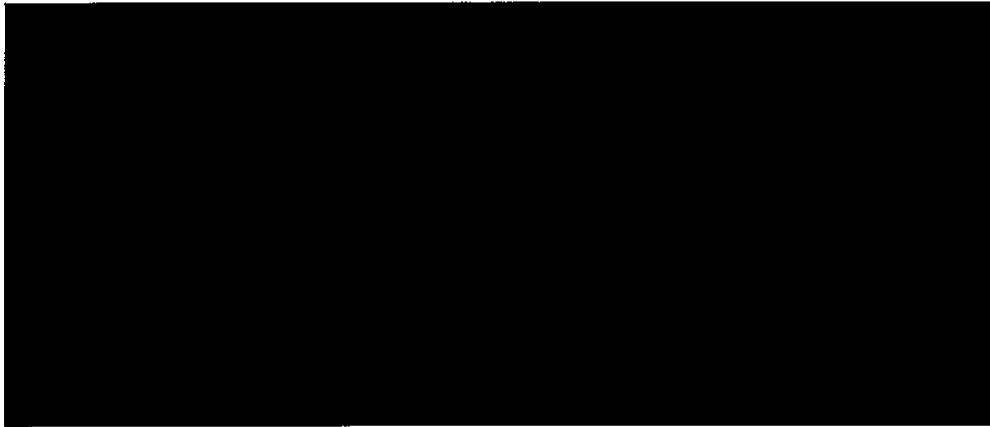
of claim 1 of the '439 patent of a 'computer network access port used by the telephone network to access the data structure."

(Ex. 1 (Commission Decision (June 6, 2008)) at 25, 29.) Neither the ALE or the ITC are claiming that the "computer network access port" is "inherent." Rather, Chestnut explicitly discloses CTI applications in the telecommuter server which function as the interface between the computer network and the telephone network.

4. Chestnut Discloses a "Data Structure" and "Lists"

The '439 patent requires storing the user-selectable criteria in a "data structure on the computer network" and in "lists." Chestnut clearly discloses storing user-selectable criteria in a "record stored in memory which associates a forwarding telephone number ... with a network logon device." (Ex. 9 ('114 patent) at 4:64-5:2, *see also* D.I. 161 (Hyde-Thomson Decl.) at ¶ 91-95.) The ITC also found that "Chestnut discloses that the telephone network has access to the lists of the database via the computer network access port." (Ex. 1 (Commission Decision (June 6, 2008)) at 28-29, *see also* 25 ("We adopt the ALJ's findings that Chestnut discloses several of the elements of claim 1 of the '439 patent, including a 'data structure contained within a computer network to store user-selectable criteria for call processing' and 'one or more lists [that] are used to filter the incoming call according to ... current activity of the user on the computer network.'").)

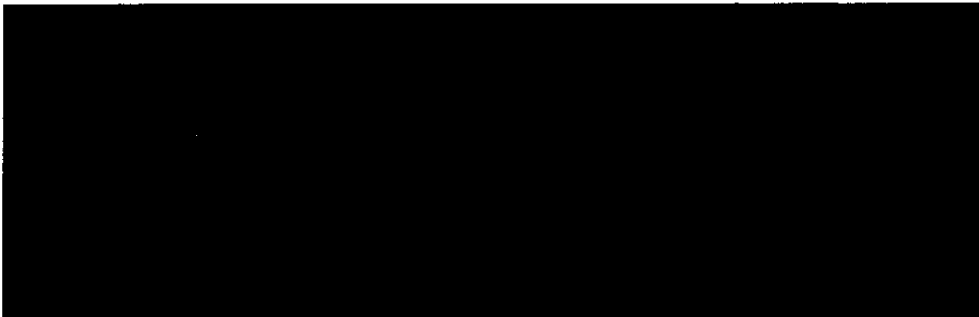
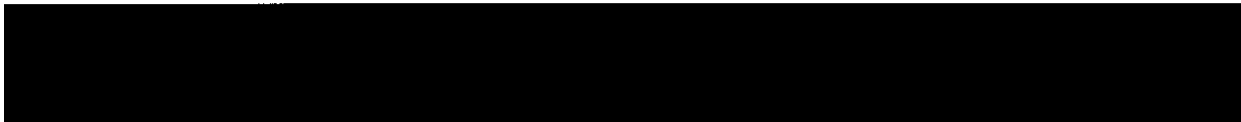


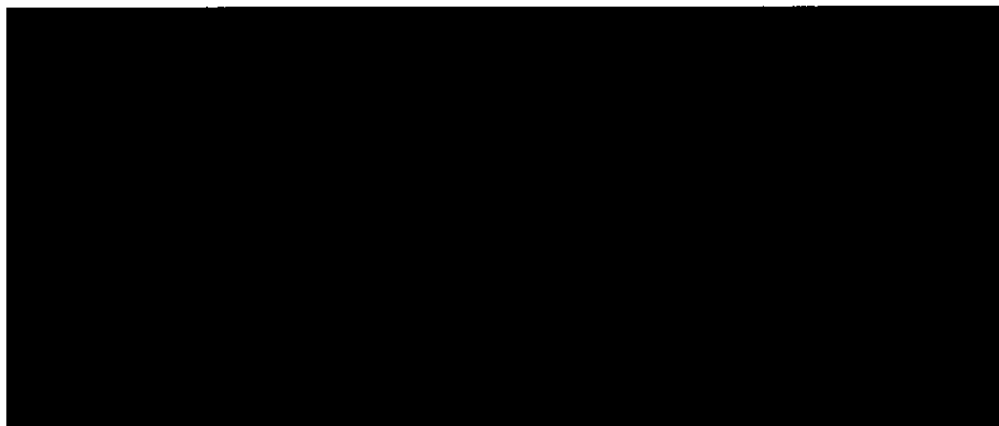
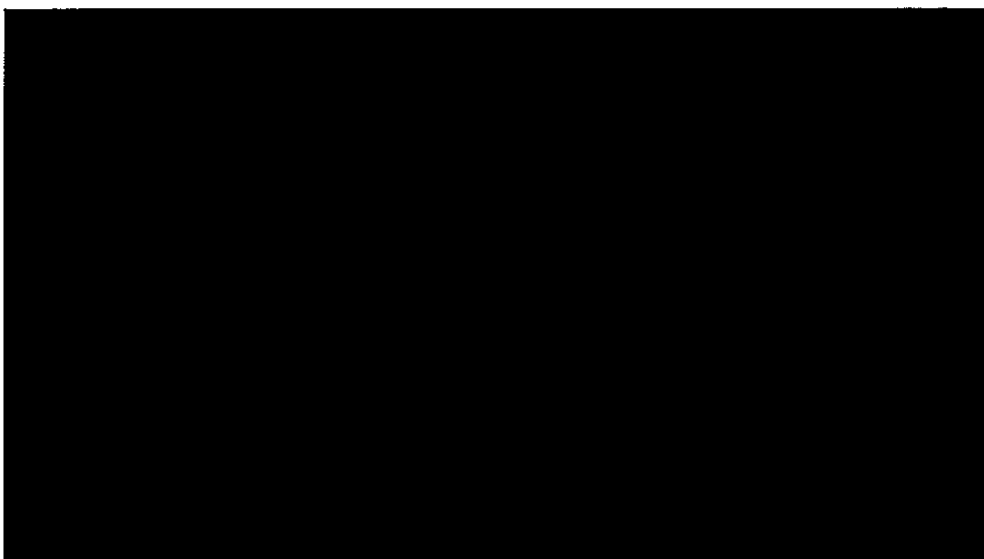


(Ex. 4 (Beckmann Dep. Tr.) at 151:25-152:14 (emphasis added).) Microsoft is improperly applying two different standards -- one for its infringement contentions and another for its invalidity contentions. Microsoft's arguments contradict the ALJ's initial determination, the Commission's final decision, and Dr. Beckmann's testimony.

5. Chestnut Discloses a "Computer Program Product"

Microsoft states that the '439 patent "requires a computer program product, comprising a computer readable medium, that performs the specific steps recited in the relevant claims." (D.I. 189 (Plaintiff's '439 Opposition Brief) at 39-40.) Microsoft claims that ALE merely provides conclusory statements. This is not so. Mr. Hyde-Thomson cites the Chestnut patent's disclosure of "CTI applications (software) as well as the telecommute server which includes hardware and software." (D.I. 161 (Hyde-Thomson Decl.) at ¶ 101.)





(Ex. 4 (Beckmann Dep. Tr.) at 190:19-192:11.) The ITC rejected Microsoft's arguments and found that "[o]ne of ordinary skill in the art understands that a computer operates using software programs and Chestnut discloses a computer program running on hardware components (*i.e.*, the telecommute server) to execute computer readable instructions." (Ex. 1 (Commission Decision (June 6, 2008)) at 33.)

CONCLUSION

For the foregoing reasons, ALE respectfully requests that the Court grant ALE's motion and enter summary judgment of non-infringement and invalidity of U.S. Patent No. 6,421,439.

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EXHIBITS 1 – 5

REDACTED IN THEIR ENTIRETY

EXHIBIT 6



US006421439B1

(12) **United States Patent**
Liffick

(10) Patent No.: **US 6,421,439 B1**
(45) Date of Patent: **Jul. 16, 2002**

(54) **SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK**

(75) Inventor: **Stephen Mitchell Liffick, Seattle, WA (US)**

(73) Assignee: **Microsoft Corporation, Redmond, WA (US)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/275,689**

(22) Filed: **Mar. 24, 1999**

(51) Int. Cl.⁷ **H04M 3/42; G06F 9/46**

(52) U.S. Cl. **379/211.02; 379/201.02; 709/328**

(58) Field of Search **379/201.01, 201.02, 379/201.03, 188, 196, 197, 198, 199, 200, 210.02, 210.03, 211.01, 211.02, 900; 370/352; 709/311, 312, 320, 328**

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* cited by examiner

Primary Examiner—Ahmad F. Matar

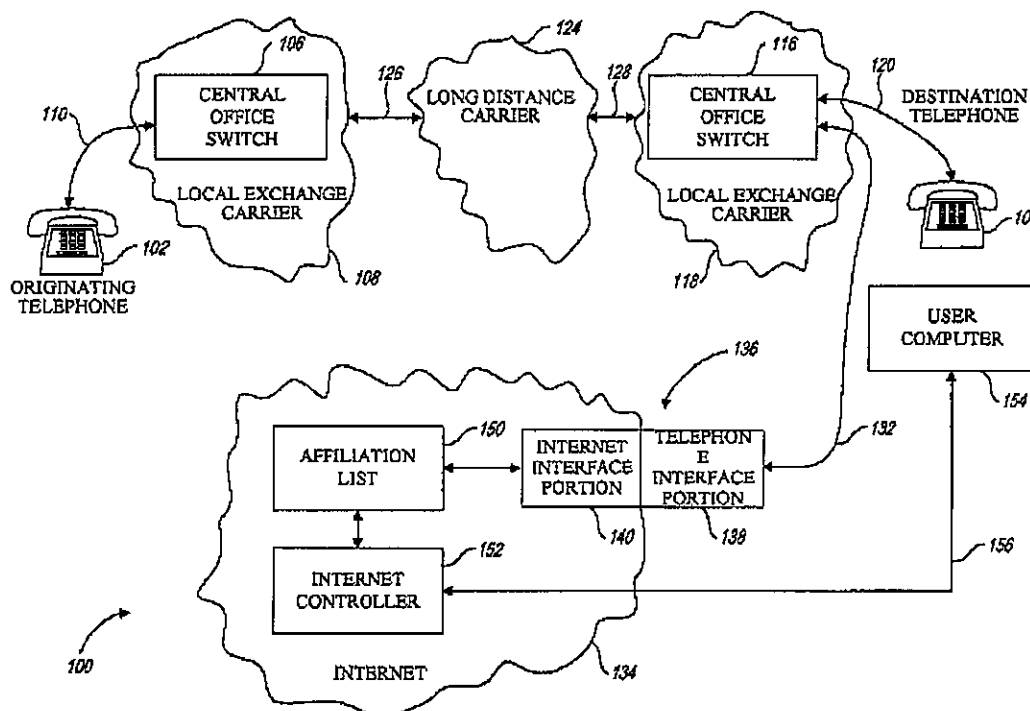
Assistant Examiner—Benny Q. Tieu

(74) *Attorney, Agent, or Firm*—Workman, Nydegger, Seeley

(57) **ABSTRACT**

A telecommunication system combines telephone technology and Internet technology to establish one or more user-specified affiliation lists. The affiliation lists are stored on the Internet and are accessible by the user and by the telecommunication portion of the system. The affiliation lists are used to process incoming calls to the user's destination telephone number. A central office switch receives the call being directed to the destination telephone number and uses a communication link with the Internet to access the user's affiliation lists. The incoming call is processed in accordance with the user-specified rules in the affiliation lists. The user may accept all incoming calls, no incoming calls, or incoming calls only from specified parties. The call processing rules may be readily edited by the user and can also include alternative call processing rules that vary in accordance with the time of day or with the user's personal desires.

51 Claims, 8 Drawing Sheets



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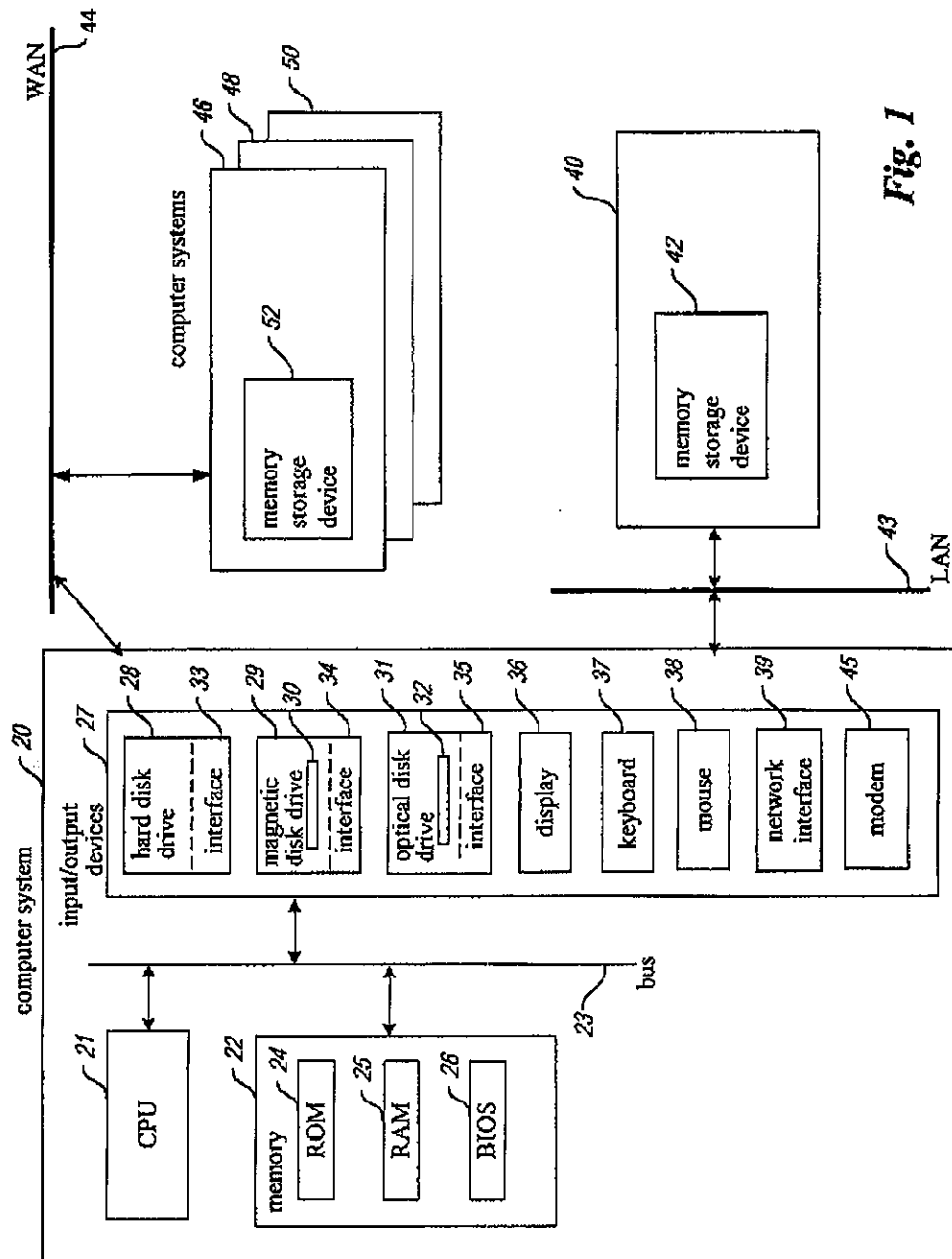


Fig. 1

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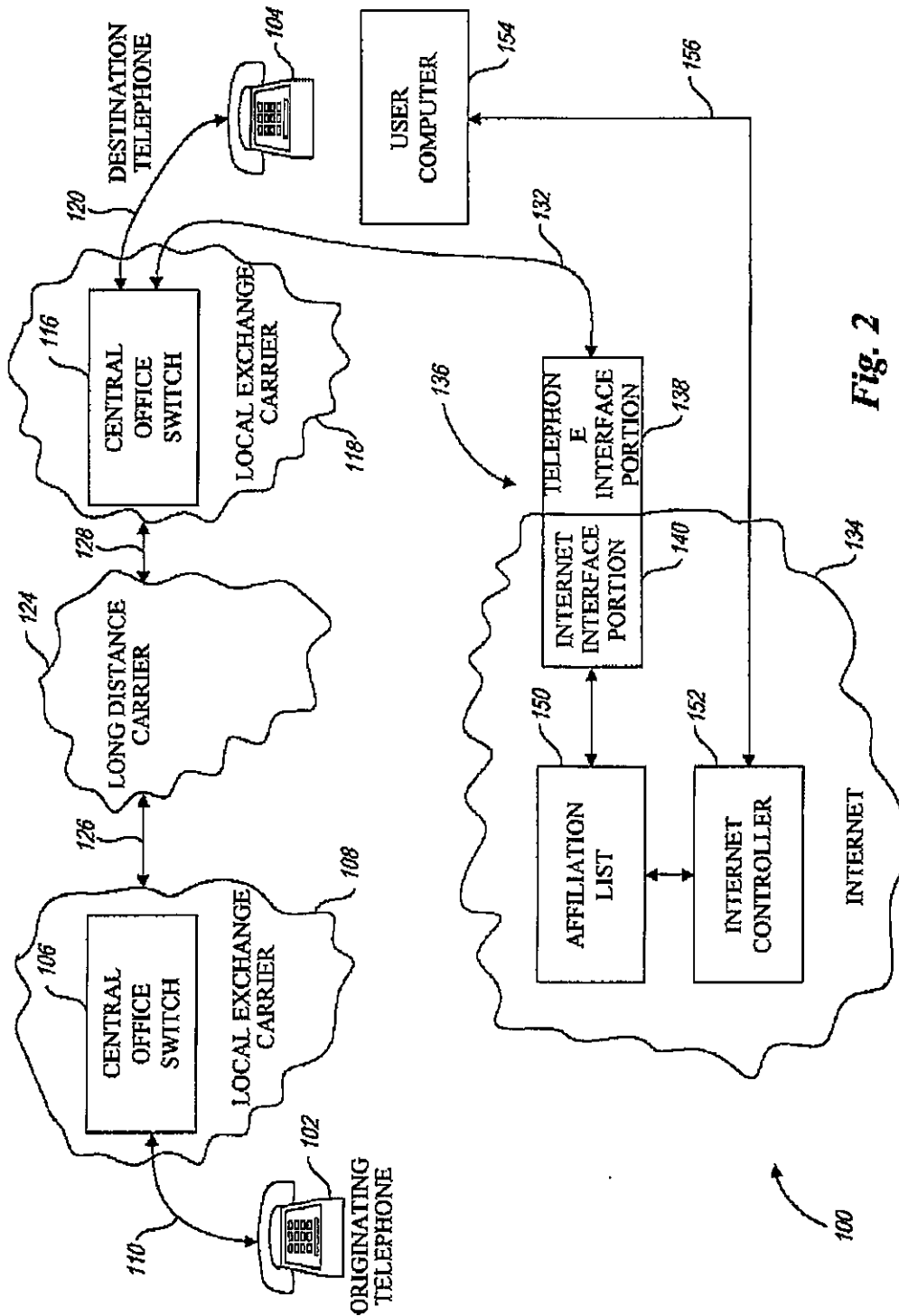


Fig. 2

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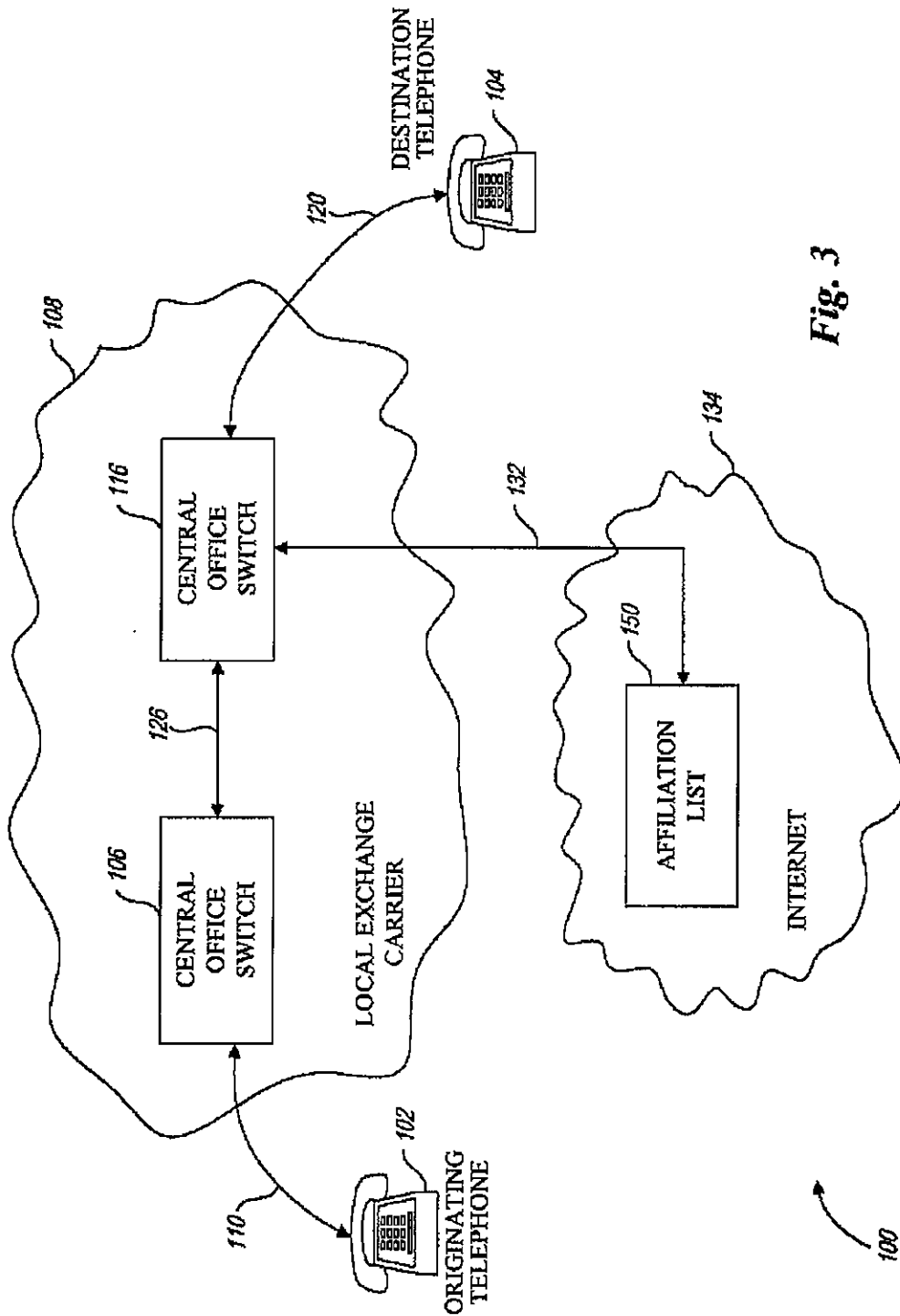


Fig. 3

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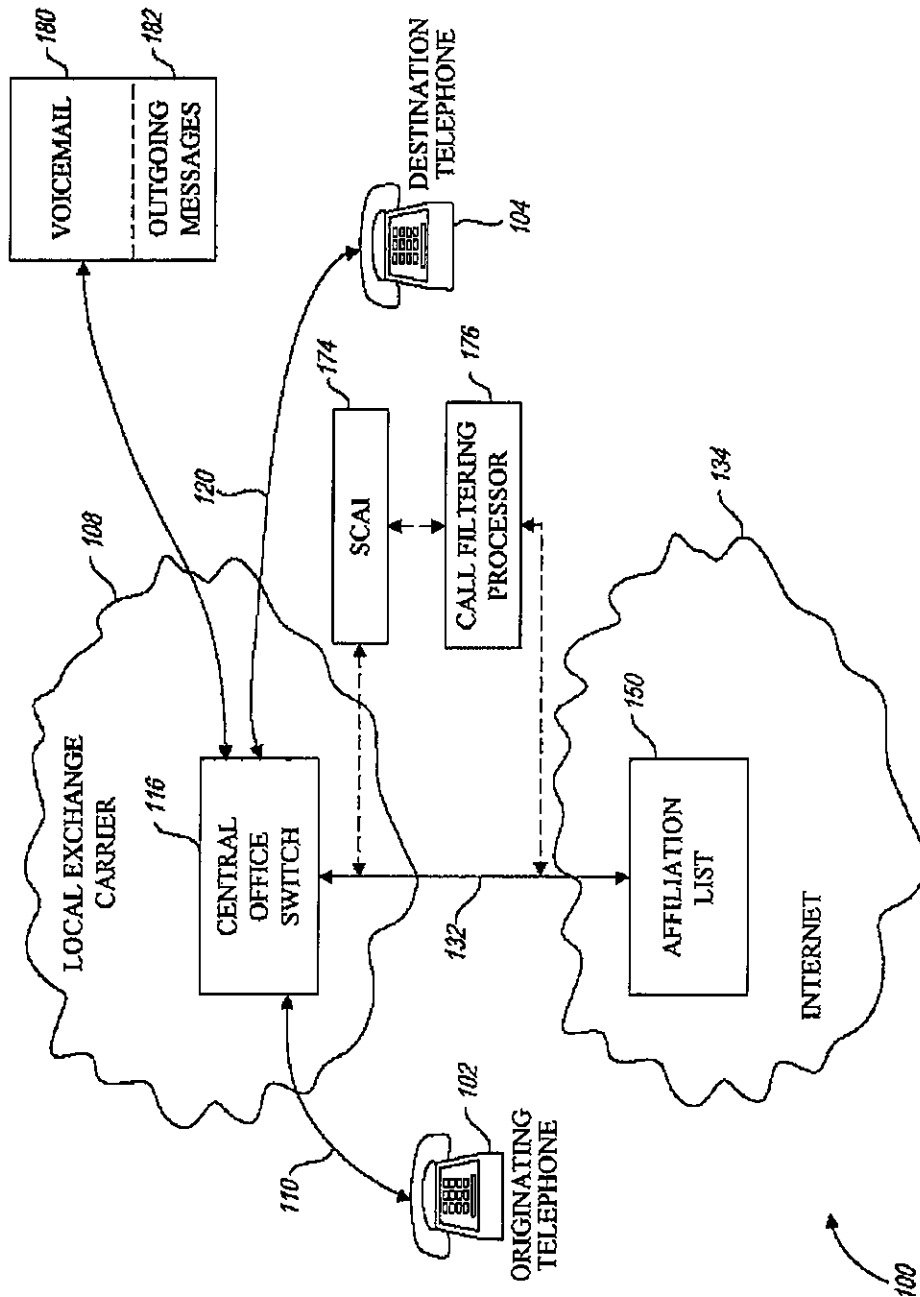


Fig. 4

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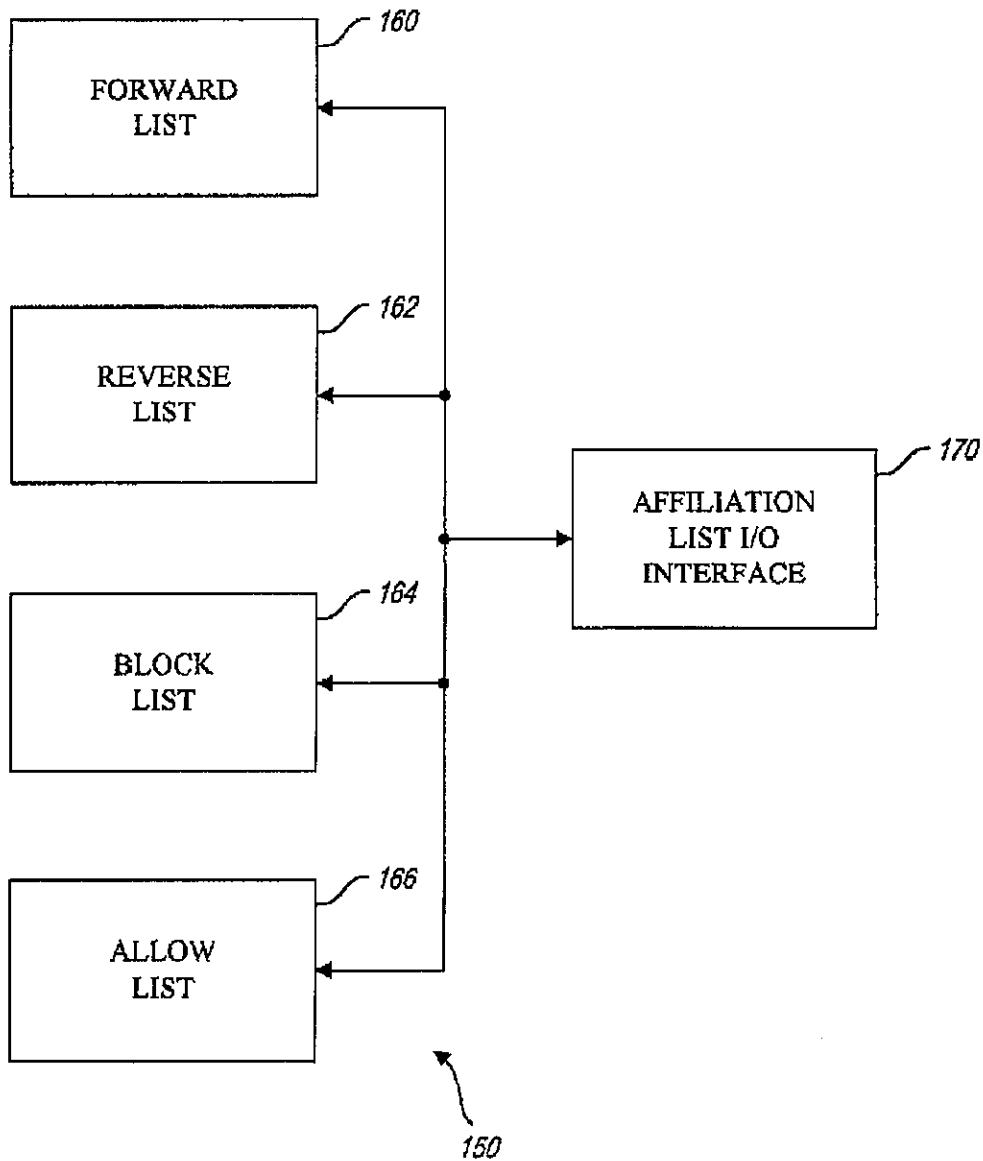


Fig. 5

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Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
.	
.	
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
.	
.	
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239

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Fig. 6

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Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
Status	Allowed
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
Status	Blocked
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239
Status	Conditional
Phone 1	- Allowed
Phone 2	- Allowed 9:00 a.m. - 11:30 a.m.
Phone 3	- Blocked

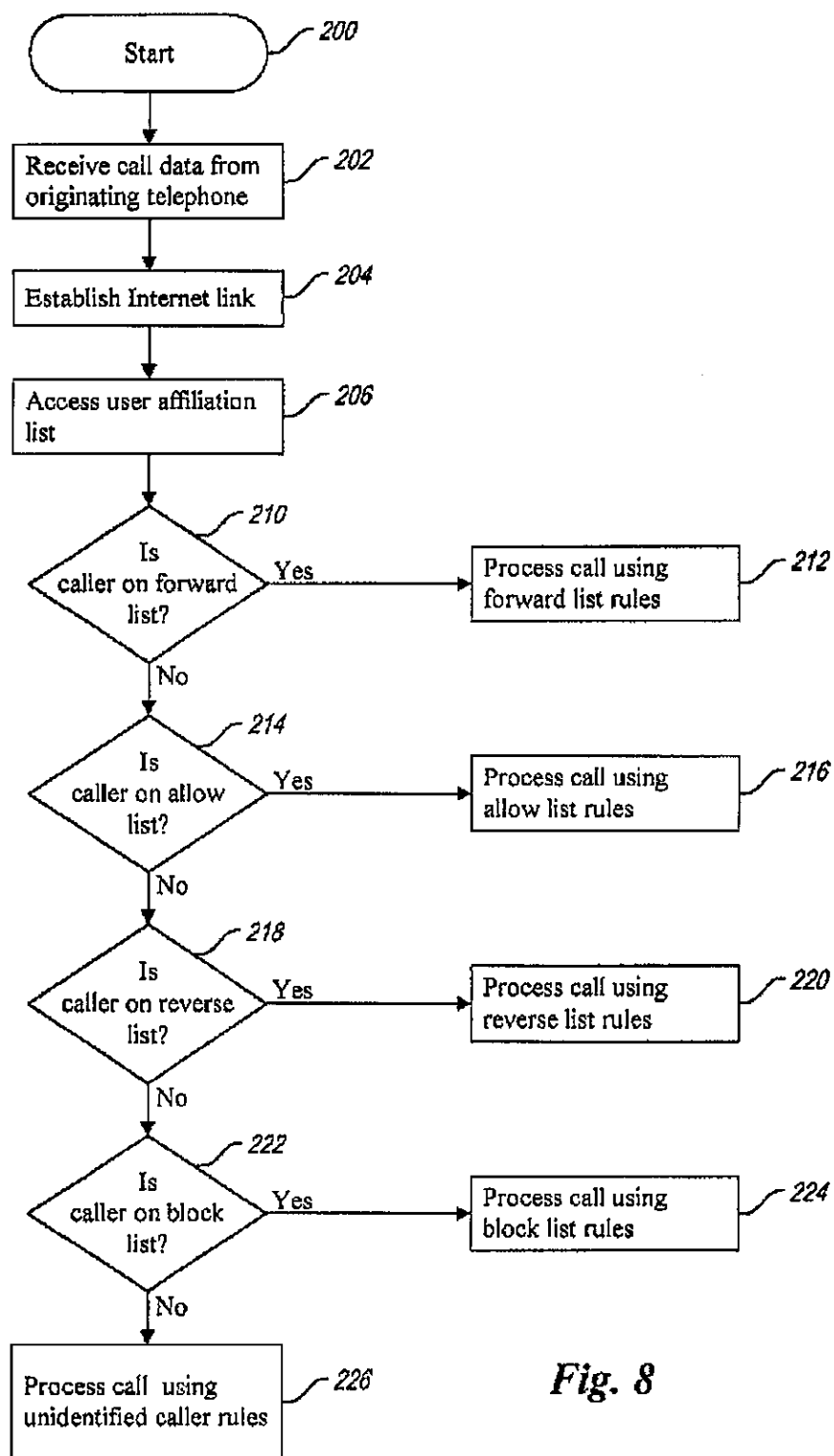
Fig. 7

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*Fig. 8*

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SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK

TECHNICAL FIELD

The present invention is directed generally to telecommunications and, more particularly, to a system and method for user selection of individual affiliations in a telephone network.

BACKGROUND OF THE INVENTION

Advances in telecommunication technology provide a user with a broad variety of communication options. For example, advances in telephone communication, including wireless telephone and cellular telephone, allow almost instantaneous communication between virtually any two locations on earth. Telephone service providers typically offer wide range of options, such as voice mail, caller identification, call waiting, call forwarding, three-way calling, and the like. The telephone service subscriber can customize their own telecommunications service with the selection of one or more options.

Despite these advances, the user is still limited in determining with whom the user wishes to speak and when the user wishes to speak with certain parties or, at the user's option, not speak with certain parties. Although caller identification (ID) can identify the calling party, caller ID does not always correctly identify the caller. For example, if the number identification data is not transmitted along with the call, the caller ID device indicates that caller data is "unavailable." In addition, the user must still respond to the ringing telephone and view the caller identification box to determine whether or not to answer the telephone. Thus, existing telephone technologies do not always provide user with the desired degree of control over incoming calls.

Therefore, it can be appreciated that there is a significant need for system and method to control incoming calls to a user's telephone. The present invention provides this and other advantages as will be apparent from the following detailed description and accompanying figures.

SUMMARY OF THE INVENTION

A system to specify user-selectable criteria for call processing is implemented on a conventional telephone system, such as a public switched telephone network (PSTN). The user-specified call processing criteria is stored on a network that is accessible by the user for data entry and/or editing, and is also accessible by the PSTN to determine whether call processing criteria exists for the particular caller. The Internet provides a readily available data structure for storage of the user-selectable call processing criteria. The user can establish a database stored on the Internet in association with the user's telephone number and indicating the user-selectable call processing criteria for one or more potential callers.

The caller may be identified by caller identification data, such as automatic number identification (ANI). Based on the destination telephone number and the caller identification data, the PSTN accesses the Internet and examines an affiliation list corresponding to the destination telephone number. If the caller identification data is present in the affiliation list, the call may be processed in accordance with the user-specified criteria for that particular caller.

The user (i.e., the called party) can specify user-selectable call processing criteria for all incoming calls, incoming calls from selected callers, and may further apply conditional

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criteria based on user preferences. For example, the user may select all calls during certain times of the day, calls from selected parties during other specified times of the day, and no calls during other times of the day. The user-selectable call processing criteria may be readily edited by the user and may be applied to multiple phone numbers associated with a particular caller.

The system may be readily implemented on current telephone systems with no significant modifications. For example, the system may apply the user-specified call processing criteria at the central office switch to which the destination telephone is coupled. All call processing prior to arrival at that central office switch is performed in accordance with conventional telecommunication techniques and standards. When a call arrives at the central office switch coupled to the destination telephone, the central office switch does not immediately establish a communication link with the destination telephone, but accesses the user-specified call processing criteria on the Internet and applies the call processing criteria. If the call is allowed, the central office switch establishes a communication link with the destination telephone in a conventional fashion to complete the telephone call. If the call is not allowed, the central office switch will not process the call, and may generate a busy signal to indicate that the user is unavailable.

The system may also be implemented at other points in the telecommunication network, such as a central office switch at the originating telephone. In addition, the user-specified call processing criteria may be stored on other forms of networks that are accessible to both the user (i.e., the called party) and the telecommunication system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a computer system that includes components to implement the system of the present invention.

FIG. 2 is a functional block diagram outlining the operation of the present invention.

FIG. 3 is a functional block diagram of an alternate telecommunications configuration implementing the present invention.

FIG. 4 is a functional block diagram of another alternative telecommunications configuration implementing the present invention.

FIG. 5 is a functional block diagram providing details of the affiliation list of the system of FIG. 2.

FIG. 6 illustrates sample data provided in the list of FIG. 5.

FIG. 7 illustrates additional sample data provided in the list of FIG. 3.

FIG. 8 is a flowchart illustrating the operation of the system of FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

Existing telephone technology does not provide the telephone subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls. However, the present invention provides selective options in between these two extremes. The present invention combines telephone technology with Internet technology to allow the user to "filter" incoming calls based on user-selected criteria. In

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particular, the user may establish a series of lists, stored on the Internet in association with the user's telephone, to filter incoming calls and thereby control access to the user's telephone.

FIG. 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules, being executed by a personal computer. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

With reference to FIG. 1, an exemplary system for implementing the invention includes a general purpose computing device in the form of a conventional personal computer 20, including a processing unit 21, a system memory 22, and a system bus 23 that couples various system components including the system memory to the processing unit 21. The system bus 23 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory 22 includes read only memory (ROM) 24 and random access memory (RAM) 25. A basic input/output system 26 (BIOS), containing the basic routines that helps to transfer information between elements within the personal computer 20, such as during start-up, may be stored in ROM 24.

The personal computer 20 further includes input/output devices 27, such as a hard disk drive 28 for reading from and writing to a hard disk, not shown, a magnetic disk drive 29 for reading from or writing to a removable magnetic disk 30, and an optical disk drive 31 for reading from or writing to a removable optical disk 32 such as a CD ROM or other optical media. The hard disk drive 28, magnetic disk drive 29, and optical disk drive 31 are connected to the system bus 23 by a hard disk drive interface 33, a magnetic disk drive interface 34, and an optical drive interface 35, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the personal computer 20. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 30 and a removable optical disk 32, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROM), and the like, may also be used in the exemplary operating environment. Other I/O devices 27, such as a display 36, keyboard 37, mouse 38, and the like may be included in the personal computer 20 and function in a known manner. For the sake of brevity, other components, such as a joystick, sound board and speakers are not illustrated in FIG. 1.

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The personal computer 20 may also include a network interface 36 to permit operation in a networked environment using logical connections to one or more remote computers, such as a remote computer 40. The remote computer 40 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 20, although only a memory storage device 42 has been illustrated in FIG. 1. The logical connections depicted in FIG. 1 include a local area network (LAN) 43 and a wide area network (WAN) 44. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 20 is connected to the LAN 43 through the network interface 39. When used in a WAN networking environment, the personal computer 20 typically includes a modem 45 or other means for establishing communications over the wide area network 44, such as the Internet. The modem 45, which may be internal or external, permits communication with remote computers 46-50. In a networked environment, program modules depicted relative to the personal computer 20, or portions thereof, may be stored in the remote memory storage device 42 via the LAN 51 or stored in a remote memory storage device 52 via the WAN 44. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

The present invention is embodied in a system 100 illustrated in the functional diagram of FIG. 2. In a typical telephone communication, an originating telephone 102 is operated by a calling party to place a call to a destination telephone 104. The originating telephone generates signals that are detected by a central office switch 106 operated by a local exchange carrier (LEC) 108. The LEC 108 is the telephone service provider for the calling party. The originating telephone 102 is coupled to the central office switch 106 via a communication link 110. As those skilled in the art can appreciate, the communication link 110 may be a hard-wired connection, such as a fiber optic, copper wire, or the like. Alternatively, the communication link 110 may be a wireless communication link if the originating phone 102 is a cellular telephone or some other form of wireless telephone.

Similarly, the destination telephone 104 is coupled to a central office switch 116 operated by a local exchange carrier (LEC) 118. The destination telephone 104 is coupled to the central office switch 116 via a communication link 120. The communication link 120 may be a hard-wired communication link or a wireless communication link, as described above with respect to the communication link 110. The present invention is not limited by the specific form of communication link or central office switch.

The LEC 108 establishes a communication link with the LEC 118. As illustrated in FIG. 2, the communication link between the LEC 108 and the LEC 118 is through a long distance carrier (LDC) 124. The LEC 108 establishes a communication link 126 with the LDC 124 which, in turn, establishes a communication link 128 with the LEC 118. If the telephone call from the originating telephone 102 to the destination telephone 104 is not a long distance call, the LDC 124 is not required. In this case, the communication link 126 may couple the LEC 108 directly to the LEC 118. The use of the system 100 with other telephone configurations are illustrated in other figures.

To place a telephone call, the calling party activates the originating telephone 102 to dial in the telephone number

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corresponding to the destination telephone number 104, thereby establishing the communication link 110 with the central office switch 106. In true, the central office switch 106 establishes the communication link 126 (via the LDC 124, if necessary), thus establishing a communication link with the central office switch 116. In a conventional telephone system, the central office switch 116 establishes the communication link 120 to the destination telephone 104 causing the destination telephone to ring. If the subscriber picks up the destination telephone, a complete communication link between the originating telephone 102 and the destination telephone 104 has been established. This is sometimes referred to as "terminating" the telephone call. The specific telecommunications protocol used to establish a telephone communication link between the originating telephone 102 and the destination telephone 104 is well known in the art and need not be described herein. The preceding description of techniques used to establish the telephone communication link are provided only as a basis for describing the additional activities performed by the system 100.

With the system 100, the central office switch 116 does not initially establish the telephone communication link 120 with the destination telephone 104 to cause the telephone to ring. Instead, the central office switch 116 establishes a communication link 132 with a computer network 134, such as the Internet. As those skilled in the art can appreciate, the Internet is a vast multi-computer network coupled together by data links having various communication speeds. Although the Internet 134 may use a variety of different communication protocols, a well-known communication protocol used by the Internet is a Transmission Control Protocol/Internet Protocol (TCP/IP). The transmission of data on the Internet 134 using the TCP/IP is known to those skilled in the art and need not be described in greater detail herein.

The central office switch 116 utilizes conventional telephone communication protocols, which may be different from the TCP/IP communication protocols used by the Internet 134. The system 100 includes a communication interface 136 to translate data between the two communication protocols. The communication interface 136 includes a telephone interface portion 138 and an Internet interface portion 140. The telephone interface portion 138 is coupled to the central office switch 116 via the communication link 132 such that communications occurring on the communication link 132 utilize the telephone communication protocol. The Internet interface portion 140 communicates via the Internet using conventional communication protocols, such as TCP/IP.

The communication interface 136 may be implemented on a computing platform that functions as a server. The conventional components of the computing platform, such as a CPU, memory, and the like are known to those skilled in the art and need not be described in greater detail herein. The telephone interface portion 138 may comprise an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) to communicate with the central office switch 116. The ISDN PRI, which may be implemented on a plug-in computer card, provides information to the telephone interface portion 138, such as automatic number identification (ANI), dialed number identification service (DNIS), and the like. As is known, ANI provides the telephone number of the caller's telephone (e.g., the originating telephone 102) while the DNIS allows the number the caller dialed (e.g., the destination telephone 104) to be forwarded to a computer system. These data may be con-

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sidered "keys" which may be used by the system 100 to identify the caller and the callee. Thus, the central office switch 116 provides information which may be used to access the affiliation list 150 for the destination telephone 104.

The Internet interface portion 140 may be conveniently implemented with a computer network card mounted in the same computing platform that includes the ISDN PRI card. However, it is not necessary for satisfactory operation of the system 100 that the interface cards be co-located in the same computing platform. It is only required that the telephone interface portion 138 communicate with the Internet interface portion 140. The Internet interface portion 140 receives the incoming data (e.g., the ANI, DNIS, and the like) and generates Internet compatible commands. The specific form of the Internet commands using, by way of example, TCP/IP, are within the scope of knowledge of one skilled in the art and need not be described herein. As will be described below, data provided by the central office switch 116 will be used to access data on the Internet and use that data to determine the manner in which a telephone call will be processed.

The Internet 134 stores an affiliation list 150, which may be established by the user of the destination telephone 104. Data stored within the affiliation list 150 is accessed by the central office switch 116 to determine the manner in which the call from the originating telephone 102 will be processed. Details of the affiliation list 150 are provided below. The Internet 134 also includes an Internet controller 152 which communicates with a user computer 154 via a network link 156. The communication between the user computer 154 and the Internet 134 is a conventional communication link used by millions of computers throughout the world. For example, the user computer 154 may be a personal computer (PC) containing a communication interface, such as a modem (not shown). The network link 156 may be a simple telephone communication link using the modem to communicate with the Internet 134. The Internet controller 152 functions in a conventional manner to communicate with the user computer 154 via the network link 156. Although the communication link 132 and the network link 156 are both communication links to the Internet, the network link 156 is a conventional computer connection established over a telephone line, a network connection, such as an Ethernet link, or the like. This conventional network link 156 is significantly different from the communication link 132 between the central office switch 116 and the Internet 134. The central office switch 116 establishes the communication link 132 to access data on the Internet and uses that accessed data to determine how to process an incoming call for the destination telephone 104. The network link 156 is a computer-to-computer connection that may simply use a telephone as the physical layer to establish the network link.

In the system 100, the central office switch 116 receives an incoming call from the originating telephone 102 via the central office switch 106 and, optionally, the LDC 124. Rather than immediately establishing the communication link 120 and generating a ring signal at the destination telephone 104, the central office switch 116 establishes the communication link 132 and communicates with the Internet 134 via the communication interface 136. The purpose of such communication is to access the affiliation list 150 and thereby determine the manner in which the user of the destination telephone 104 wishes calls to be processed.

FIG. 3 illustrates the system 100 for a telephone system configuration in which the originating telephone 102 and the

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destination telephone 104 are both serviced by the same local exchange carrier 108. The originating telephone 102 establishes the communication link 110 with the central office switch 106 in the manner described above. The central office switch 106 establishes the communication link 126 directly with the central office switch 116 without the need for the LDC 124 (see FIG. 2). The central office switch 116 operates in the manner described above. That is, the central office switch 116 does not immediately establish the communication link 120, but does establish the communication link 132 with the Internet 134. For the sake of simplicity, FIG. 3 does not illustrate the communication interface 136. However, those skilled in the art will appreciate that the central office switch 116 accesses the affiliation list 150 via the communication interface 136 (see FIG. 2).

For the sake of simplicity, FIG. 3 also does not show the Internet controller 152 and the user computer 154. However, those skilled in the art can appreciate that those portions of the system may also be present in the embodiment illustrated in FIG. 3. However, it should be noted that the user computer 154 and the Internet controller 152 need only be used to edit the affiliation list 150. The call processing by the central office switch 116 does not depend on the presence of the Internet controller 152 or the user computer 154. That is, the central office switch 116 accesses the affiliation list 150 via the communication interface 136 regardless of the presence of the user computer 154.

In yet another telephone system configuration, illustrated in FIG. 4, the originating telephone 102 and the destination telephone 104 are not only serviced by the same local exchange carrier 108, but are connected to the same central office switch 116. However, the fundamental operation of the system 100 remains identical to that described above with respect to accessing the affiliation list 150. That is, the originating telephone 102 establishes the communication link 110 with the central office switch 116. However, the central office switch 106 need not establish the communication link 126 with any other central office switch since the destination telephone 104 is also connected to that same central office switch.

In this telephone system configuration, the central office switch 116 accesses the affiliation list 150 on the Internet 134 via the communication link 132 (see FIG. 2) in the manner described above. For the sake of simplicity, FIG. 4 does not illustrate the communication interface 136. However, those skilled in the art will recognize that the communication interface 136 operates to convert communication signals between telephone protocol used by the central office switch 106 and the Internet communication protocol used by the Internet 134. In addition, FIG. 4 also does not illustrate the Internet controller 152 and the user computer 154. As noted above with respect to FIG. 3, the Internet controller 152 and user computer 154 are not necessary for proper operation of the system 100. The user computer 154 is typically used in the system 100 to edit the affiliation list 150.

The affiliation list 150 is illustrated in greater detail in the functional block diagram of FIG. 5. The affiliation list comprises a series of sublists, illustrated in FIG. 3 as a forward list 160, a reverse list 162, a block list 164, and an allow list 166. The forward list 160 contains a list of Internet subscribers whose Internet activity a user wishes to monitor. This list is sometimes referred to as a "buddy" list. When the user operates the user computer 154 on the Internet 134, the Internet controller 152 accesses the forward list 160 via an affiliation list input/output (I/O) interface 170 to determine which Internet subscribers contained within the forward list

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are currently active on the Internet 134. In conventional Internet operation, the Internet controller 152 sends a message to the user computer 154 indicating which Internet subscribers on the forward list 160 are currently active on the Internet 134.

The forward list 160 is a list of Internet subscribers whose activity is reported to the user. Other Internet subscribers may have their own forward list (not shown) and may monitor the Internet activity of the user. When the user accesses the Internet 134 with the user computer 154, that activity can be monitored by others. With the system 100, it is possible to determine who is monitoring the user's Internet activity. The reverse list 162 contains a list of Internet subscribers who have placed the user in their forward list. That is, the reverse list 162 contains a list of Internet subscribers who have placed the user in their buddy list. With the reverse list 162, the user can determine who is monitoring his Internet activity.

The block list 164 contains a list of Internet subscribers that the user does not want to monitor his Internet activity. That is, the user's Internet activity will not be provided to any Internet subscriber contained in the block list 164. Thus, even if a particular Internet subscriber has placed the user on their forward list, the presence of that particular Internet subscriber's name on the block list 164 will prevent the user's Internet activity from being reported to the particular Internet subscriber. The use of the block list 164 provides certain security assurances to the user that their Internet activity is not being monitored by any undesirable Internet subscribers.

The allow list 166 contains a list of Internet subscribers for whom the user may wish to communicate with but whose Internet activity the user does not wish to monitor.

The system 100 combines the capabilities of the affiliation list 150 with telephone switching technology to filter incoming calls to the destination telephone 104. For example, the user may specify that only calls from Internet subscribers contained in the forward list 154 may contact the user via the destination telephone 104. Alternatively, the user may specify that a calling party whose name is contained in the forward list 160 or the allow list 166 may place a call to the destination telephone 104. As will be discussed in greater detail below, the system 100 allows the user to create general conditional processing, such as blocking calls or allowing calls. However, the user can also create specific conditional processing for individual callers or based on the user's current status or preferences.

The central office switch 116 accesses the affiliation list 150 via the communication link 132 and determines whether the calling party is in a list (e.g., the forward list 160) that the user wishes to communicate with. If the calling party is contained within an "approved" list, the central office switch 116 establishes the communication link 120 and sends a ring signal to the destination telephone 104. Thus, the user can pick up the telephone with the knowledge that the calling party is an individual with whom the user wishes to communicate.

Conversely, if the calling party is not contained within an approved list, such as the forward list 160 or the allow list 166, the central office switch 116 will not establish the communication link 120 with the destination telephone 104. Thus, the user will not be bothered by undesirable phone calls. In one embodiment, the central switch office simply will not establish the communication link 120 and the calling party will recognize that the call did not go through. Alternatively, the central office switch 116 may generate a

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signal indicating that the destination telephone 104 is busy. In this alternative embodiment, the calling party will receive a busy signal on the originating telephone 102. Thus, the user has the ability to filter incoming calls by creating a list of those individuals with whom the user wishes to communicate.

It should be noted that the affiliation list 150 may be dynamically altered by the user to add or delete individuals, change individuals from one list to another, or to change the call processing options for a particular list depending on the user's preferences. For example, the user may want to accept all calls from any source at certain times of the day. Under these circumstances, the user can edit the allow list 166 to accept calls from any calling party. Alternatively, the user may still maintain the block list 164 such that calls will not be processed from certain specified parties even if the user is willing to accept calls from any other source. Under other circumstances, the user may not wish to communicate with any individuals. In this instance, the user may indicate that all calling parties are on the block list 164. Thus, the central office switch 116 will access the Internet 134 in real-time and review data in the affiliation list 150 to thereby process incoming calls for the user in accordance with the rules present in the affiliation list.

The discussion above provides examples of the central office switch 116 processing calls from a calling party in accordance with their presence or absence of certain lists in the affiliation list 150. For example, a call from a party on the forward list 160 will be connected to the destination telephone 104 (see FIG. 2) while a call from a party on the block list 164 will not be put through to the destination telephone. However, the system 100 also allows the selection of call processing options on an individual basis rather than simply on the presence or absence in a particular list. For example, the user can edit the allow list 166 to specify that certain individuals are "allowed" while other individuals may be allowed, conditionally allowed, or blocked all together. If the individual calling party has an associated status indicating that they are allowed, the central office switch 116 will process the incoming call and connect it to the destination telephone 104. If the individual calling party has an associated blocked status, the central office switch 116 will not process the call and will not connect it to the destination telephone 104.

Furthermore, the user may attach conditional status to individual callers or to calling lists. Conditional status may be based on factors, such as the time of day, current availability of the user, work status, or the like. For example, the user may accept calls from certain work parties during specified periods of the day (e.g., 9:00 a.m.-11:00 a.m.), block calls from selected calling parties during other periods of time (e.g., 12:00-1:00 p.m.), or allow calls during a business meeting only from certain calling parties (e.g., the boss). These conditional status criteria may be applied to individuals or to one or more lists in the affiliation list 150.

FIG. 6 illustrates sample data entries in the allow list 166. The allow list 166 may include data, such as a name, Internet subscriber name, and one or more phone numbers associated with the individual data entry. It should be noted that the calling party need not have an Internet subscriber name for proper operation of the system 100. That is, the central office switch 116 accesses the allow list 166 utilizing the calling party number and need not rely on any email addresses or other Internet subscriber identification for proper operation. The allow list 166 may also include an email alias in addition to or in place of the Internet subscriber name. Some Internet subscribers prefer to "chat" with other subscribers

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utilizing an alias rather than their actual Internet subscriber name. The data of FIG. 6 illustrates one possible embodiment for the allow list 166. However, those skilled in the art can appreciate that the allow list 166 may typically be a part of a large database (not shown). Database operation is well known in the art, and need not be described in greater detail herein. The database or other form of the forward list 160 may be satisfactorily implemented using any known data structure for storage of data. For example, the various lists (e.g., the allow list 166, the reverse list 162, the block list 164 and the allow list 166) may all be integrated within a single database structure. The present invention is not limited by the specific structure of the affiliation list 150 nor by the form or format of data contained therein.

Rather than incoming call filtering on the basis of presence in a particular list, such as the allow list 166, as illustrated in FIG. 6, the affiliation list 150 may contain status data on an individual basis. In this event, the central office switch 116 (see FIG. 2) processes the incoming call in accordance with the designated status for that individual. In the example illustrated in FIG. 7, the affiliation list 150 contains one individual with an "allowed" status, one individual with a "blocked" status, and one individual with a "conditional" status based on user-selected criteria. In the example of FIG. 7, the user-selected criteria may be based on the particular phone from which the call is originating as well as the time of day in which the call is originated. For example, the user may wish to allow all calls from a particular number, such as an caller's work number. However, calls from another number, such as the caller's home phone, may be blocked. Other calls, such as from a caller's cellular telephone, may be allowed only at certain times of day. FIG. 7 is intended to illustrate some of the call processing options that are available to the user. As can be appreciated, a variety of different conditional status criteria may be applied to one or more potential calling parties. However, a common feature of the system 100 is that the telecommunication system (e.g., the central office switch 116) determines calling party status on the basis of information stored on the Internet and processes the incoming call in accordance with the user-specified criteria. Moreover, the system 100 operates in real-time to process the incoming call in accordance with the user-specified criteria.

The Internet 134 may be conveniently used as a storage area for the caller specified criteria. The advantage of such data storage on the Internet is that the data is widely accessible to the user. This provides a convenient mechanism for entering new caller data or editing existing caller data. The user can access the affiliation list 150 with the user computer 154 via the network link 156. In contrast, the central office switch 116 may access the affiliation list 150 via the communication link 132, which may typically be a high-speed communication link. In addition, FIGS. 2, 4, and 5 illustrate the central office switch 116 as the telecommunication component that accesses the Internet 134. It is convenient for operational efficiency to have the central office switch (e.g., the central office switch 116) to which the destination telephone 104 is connected perform such Internet access. It is at this stage of the telephone call processing that the telecommunication system may most conveniently determine the user-specified caller status. However, those skilled in the art will recognize that the status check may be performed by other portions of the telecommunication system, such as the central office switch 106, the LDC 124, or the like. Thus, the present invention is not limited by the particular telecommunication component that establishes the communication link with a network which the user-specified caller status data is stored.

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In addition, the system 100 can be readily implemented as an "add-on" component of the telecommunication system and need not be integrated with the central office switch 116. For example, the conventional central office switch provides the ability to divert calls based on certain call conditions, such as "Call Forward No Answer," which may be used to divert an incoming call to voicemail or "Call Forward Busy," which may also divert the incoming call to voicemail. To implement the system 100 with an add-on processor, the system may optionally include a Switch to Computer Applications Interface (SCAI) 174 and a call filtering processor 176. The dashed lines of FIG. 4 are intended to illustrate an alternative configuration of the system 100. This alternative configuration can also be implemented with other telephone system configurations, such as illustrated in FIGS. 2 and 3. The SCAI 174 is a telecommunication protocol that allows switches to communicate with external computers. Data, such as caller and callee telephone numbers, and status information, such as Call Forward Busy, are provided to the SCAI 174 by the central office switch 116.

The call filtering processor 176 performs the functions described above to process the call in accordance with the user-specified criteria. That is, the call filtering processor 176 receives caller and callee data from the SCAI 174 and accesses the affiliation list 150 via the communication interface 136 (see FIG. 2). The call filtering processor 176 uses user-specified call processing criteria to generate instructions for the central office switch 116. The instructions are provided to the central office switch 116 via the SCAI 174. Those skilled in the art will appreciate that the SCAI 174 is but one example of the Open Application Interface (OAI) that can be used with the central office switch 116.

As noted above, the system 100 can process a call intended for the destination telephone 104, block a call, or generate a busy signal at the originating telephone 102. However, the system 100 also operates with voicemail and permits a number of different customized outgoing messages. FIG. 4 illustrates a voicemail system 180 having a storage area containing one or more outgoing messages 182. For example, the voicemail system 180 can play an outgoing message 182 informing the caller that "the party you are calling only accepts calls from designated callers. Please leave a message." If calls are blocked only at certain times, the outgoing message 182 can say "the party you are calling does not accept calls between 11:30 a.m. and 1:00 p.m. Please leave a message or call back after 1:00 p.m." The outgoing message can also reflect callee availability by playing a message such as "The party you are calling is in a meeting. Please leave a message or call back in X minutes" where X reflects the amount of time before the meeting is expected to end. That information can be manually provided to the affiliation list 150 by the user or automatically derived from a computerized scheduling program on, by way of example, the user computer 154 (see FIG. 2).

Computerized scheduling programs, such as Microsoft® Schedule Plus, can be used on the user computer 154 (see FIG. 2). It is known that such scheduling programs can be accessed via a computer network or downloaded to a handheld computing device to track appointments. The system 100 can access such computerized scheduling programs and download appointments and scheduled meetings into the affiliation list 150. The outgoing messages 182 can be automatically selected on the basis of the user's computerized schedule. Thus, the system 100 permits the user to schedule his day (e.g., meetings, lunch time, in office/

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available for calls, in office/unavailable for calls, etc.) on a computerized scheduling program and to process calls in accordance with the computerized schedule and even select outgoing messages automatically based on the user's schedule.

The operation of the system 100 is illustrated in the flowchart of FIG. 7. At a start 200, the calling party has placed a call from the originating telephone 102 (see FIG. 2) to the destination telephone 104. In step 202, the central office switch 116 has received call data from the originating telephone 102. This received call data includes the destination telephone number of the destination telephone 104 and identification data indicating the originating telephone 102 as the source of the present call. Use of automatic number identification (ANI) is a well-known technique for providing identification data indicating the originating telephone 102 as the source of the present call. While the specific implementation of ANI data, sometimes referred to as caller ID, may not be uniformly implemented throughout the United States, the ANI data is typically delivered between the first and second rings. In the present invention, the central office switch 116 (see FIG. 2) does not initiate a ring signal to the destination telephone 104 until after determining the status of the calling party based on the ANI. In future implementations, telecommunication companies may transmit other forms of caller identification, such as caller name, Internet address, email alias, or the like. The system 100 operates satisfactorily with any form of caller identification. The only requirement for the system 100 is that some form of caller identification be provided. The call is processed in accordance with the user-specified criteria in the affiliation list 150 for the identified caller.

In step 204, the central office switch 116 (see FIG. 2) establishes the communication link 132 with the Internet 134. Although step 204 illustrates the system 100 as actively establishing the communication link 132 with the Internet 134, those skilled in the art will recognize that the system 100 can utilize a continuous high-speed data link between the central office switch and the Internet. Thus, it is not necessary to establish a network link for each and every incoming call processed by the central office switch 116. As previously described, the communication interface 136 translates data between the telephone protocol and the Internet protocol. In step 206, the system 100 accesses the affiliation list 150 for the user (i.e., the called party). In an exemplary embodiment, the telephone number of the destination telephone 104 or other callee identification is used as an index or pointer to a specific location within the database where the affiliation list 150 for the particular user may be found. Database operation in general, and techniques for locating specific items within a database in particular are known to those skilled in the art and need not be described herein.

In decision 210, the system 100 determines whether the caller identification data is on the forward list 160 (see FIG. 3). If the caller identification data is present in the forward list, the result of the decision 210 is YES. In that event, the system 100 proceeds to FIG. 7B where the call is processed in accordance with the rules associated with the forward list 160.

If the caller identification data is not present in the forward list 160 (see FIG. 3), the result of decision 210 is NO. In that event, the system 100 moves to decision 212 to determine whether the caller identification data is in the allow list 166. If the caller identification data is present in the allow list 166, the result of decision 214 is YES. In that event, the system 100 proceeds to decision 216 where the

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call is processed in accordance with the rules associated with the allow list 166. If the caller identification data is not present in the allow list 166, the result of decision 216 is NO.

In decision 218, the system 100 determines whether the caller identification data is present in the reverse list 162. If the caller identification data is present in the reverse list 162, the system 100 proceeds to the step 220 where the call is processed in accordance with the rules associated with the reverse list 162. If the caller identification data is not present in the reverse list, the result of decision 218 is NO. In that event, the system moves to decision 216 to determine whether the caller is present on the block list 164. If the caller is present on the block list 164, the result of decision 222 is YES. In that event, the system proceeds to step 224 where the call is processed in accordance with the rules associated with the block list. If the caller identification data is not present in the block list 164, the result of decision 222 is NO. This indicates that the caller identification data is not present in any of the user-specified lists in the affiliation list 150. In that event, the system moves to step 226 where the call may be processed in accordance with user-specified rules of processing anonymous or unidentified calls. The flowchart of FIG. 8 illustrates the operation of the system 100 with multiple lists wherein the call processing rules are designated for each list. In this embodiment, the call is processed on the basis of the presence or absence of the caller identification data in a particular list. However, as previously discussed, the affiliation list 150 (see FIG. 6B) may include user-specified status criteria for individual callers. In this embodiment, the system 100 processes the call on the basis of the user-specified status criteria associated with the individual caller rather than on the basis of the caller's presence or absence in a specific list. In that event, the system 100 may simply access the user affiliation list (see step 206 in FIG. 7) and process the call in accordance with the user-specified status criteria for the individual caller. If the caller identification data is not present in the affiliation list 160, the call may be processed using user-specified call processing criteria for unidentified callers, as shown in step 226.

Thus, the system 100 allows the user to specify call processing rules for a plurality of different caller lists or for individual callers within a list. The caller lists may be readily edited in accordance with the changing desires of the user. The user may alter the call processing rules in accordance with various times of day, work conditions, or even the personal mood of the user. For example, the user may process all calls during certain times of the day, such as when the user is at work. However, when the user arrives home, subsequent calls may be processed in accordance with a different set of rules, such as accepting no calls during dinner time or after a certain time at night.

These rules may be applied differentially to different ones of the list in the affiliation list 150. For example, the user may accept calls from any calling party on the forward list 160 (see FIG. 3) or the allow list 166 during the evening hours. However, after a certain time at night, the caller may accept calls only from calling parties on the forward list 160. Thus, the system 100 allows great flexibility in the user selection of calling rules and lists. The system 100 allows the user to filter incoming calls in accordance with generalized rules or in accordance with highly specific rules.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. For example, the system discussed herein

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uses, by way of example, the Internet 134 to store the affiliation list 150. However, the system 100 can be implemented with other computer networks or as a portion of a telephone switch, such as the central office switch 116. The telephone service provider can provide a customer with an affiliation list and some means to control the list as a value-added telephone service. The central office switch 116 accesses the internal affiliation list and processes the incoming calls in accordance with the user-specified criteria contained therein. Accordingly, the invention is not limited except as by the appended claims.

What is claimed is:

1. In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

a controller to receive the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

2. The system of claim 1 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

3. The system of claim 2 wherein the identification data is telephone automatic number identification data.

4. The system of claim 2 wherein the identification data is electronic mail identification data.

5. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

6. The system of claim 1 wherein the user-selectable criteria indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

7. The system of claim 6 wherein the controller blocking the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

8. The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone.

9. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the controller processing

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the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during a time period other than the user-selected time period.

10. The system of claim 9, further comprising an outgoing message system storing a plurality of outgoing messages, the controller selecting one of the plurality of outgoing messages wherein the outgoing message system plays the selected outgoing message at an origination telephone from which the incoming call is originated.

11. The system of claim 10 wherein the incoming call arrives at a particular time other than the user-selected time period, the controller selecting the selected outgoing message based on the particular time of arrival of the incoming call.

12. The system of claim 1, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

13. The system of claim 12 wherein the data editor is a computer coupled to the computer network.

14. The system of claim 1 wherein the computer network is the Internet.

15. The system of claim 1 wherein each of the one or more lists of the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the controller using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

16. The system of claim 15, further comprising a data editor to permit user entry of the caller identification data into the data structure prior to receipt of the incoming call.

17. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the controller processing the incoming call and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

18. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the controller blocking processing of the incoming call if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

19. The system of claim 18 wherein the controller blocking processing of the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

20. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls subject to user-selected time restrictions, the controller processing the incoming call in accordance with the time restrictions and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

21. In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled

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with the telephone network, a system for user specification of call processing in the telephone network, the system comprising:

a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing, wherein some of the plurality of caller lists are conditioned according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the plurality of caller lists; and

a controller on the telephone network to receive an incoming call having origination data indicative of a subscriber and destination data indicating the call is designated for the user telephone, the controller accessing the plurality of caller lists in the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.

22. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

23. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

24. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call during a user-selected time period, the controller processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

25. The system of claim 21, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

26. The system of claim 21 wherein the computer network is the Internet.

27. The system of claim 21 wherein the telephone network is a public switched telephone network.

28. In a system where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a computer program product for implementing a method for processing a call from a subscriber to a user over a telephone network, the computer program product comprising:

a computer readable medium having computer executable instructions for performing the method, the method comprising:

accepting an incoming call designated for the user telephone;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the

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user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call in accordance with the user-selectable criteria.

29. The computer program product of claim 28, further comprising:

generating call processing rules based on the user-selectable criteria; and

storing the call processing rules on the computer network in association with a caller list.

30. The computer program product of claim 29 wherein generating call processing rules is performed on a computer coupled to the computer network.

31. The computer program product of claim 28 wherein the data structures store the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the method further comprising accessing the data structure using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

32. The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call, the method comprising:

processing the incoming call comprising establishing a link with the user telephone; and

generating a ring signal at the user telephone.

33. The computer program product of claim 28 wherein the user-selectable criteria indicates no permission to process the incoming call, the method further comprising

processing the incoming call comprising blocking the incoming call; and

not generating a ring signal at the user telephone.

34. The computer program product of claim 33, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

35. The computer program product of claim 34, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

36. The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the method further comprising:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone; and

blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

37. The computer program product of claim 28 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the method further comprising:

accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data; and

processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

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38. In a system including a telephone network and a computer network where an originating telephone connects with a user telephone over the telephone network, a method for processing a call from the originating telephone to the user telephone according to user specifications, the method comprising:

accepting an incoming call designated for the user telephone from an originating telephone of a subscriber;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call of the subscriber in accordance with the user-selectable criteria.

39. The method of claim 38, further comprising generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list that is associated with the data structure.

40. The method of claim 39 wherein generating call processing rules is performed on a computer coupled to the computer network.

41. The method of claim 38 wherein the computer network is the Internet.

42. The method of claim 38 wherein the telephone network is a public switched telephone network.

43. The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, wherein accessing a data structure further comprises using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

44. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call, wherein processing the incoming call further comprises establishing a link with the user telephone and generating a ring signal at the user telephone.

45. The method of claim 38 wherein the user-selectable criteria indicates no permission to process the incoming call, wherein processing the incoming call further comprises blocking the incoming call and not generating a ring signal at the user telephone.

46. The method of claim 45, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

47. The method of claim 45, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

48. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, wherein processing the incoming call further comprises:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone;

blocking the incoming call; and

not generating a ring signal at the user telephone during time periods other than the user-selected time period.

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49. The method of claim 38 wherein the data structure comprises a plurality of data substructures each storing caller identification and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, wherein accessing the data structure further comprises using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

50. The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incom-

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ing calls, wherein processing the incoming call further comprises signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

51. The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, wherein processing the incoming call further comprises not establishing a communication link with the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,421,439 B1
DATED : July 16, 2002
INVENTOR(S) : Stephen Mitchell Liffick

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 1.

Line 37, after "need for" please insert -- a --

Column 3.

Line 61, before "and the like" please delete "(ROM)," and insert -- (ROMs), --

Column 5.

Line 3, after "In" please delete "true" and insert -- turn --

Column 10.

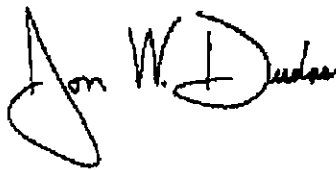
Line 28, after "such as" please delete "an" and insert -- a --

Column 17.

Line 31, after "method further comprising" please insert -- : --

Signed and Sealed this

Sixth Day of April, 2004



JON W. DUDAS
Acting Director of the United States Patent and Trademark Office

EXHIBITS 7-8

REDACTED IN THEIR ENTIRETY

EXHIBIT 9



US006041114A

United States Patent [19]
Chestnut

[11] **Patent Number:** **6,041,114**
 [45] **Date of Patent:** **Mar. 21, 2000**

[54] **TELECOMMUTE SERVER**[75] **Inventor:** Kevin L. Chestnut, Seattle, Wash.[73] **Assignee:** Active Voice Corporation, Seattle, Wash.

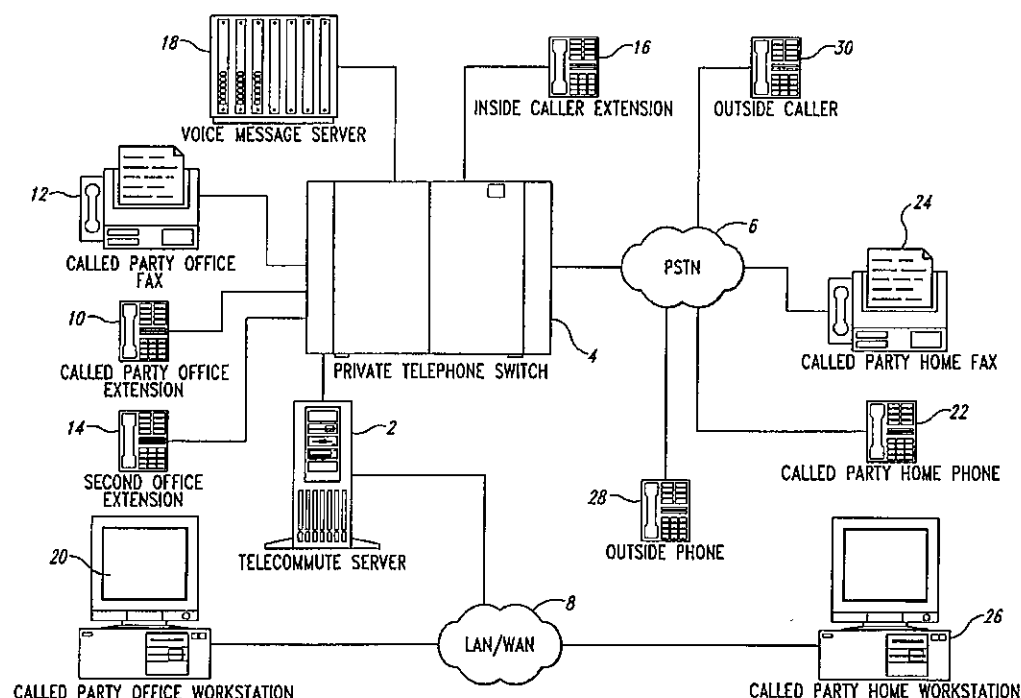
5,568,540 10/1996 Greco et al. 379/88.23 X
 5,633,916 5/1997 Goldhagen et al. 379/93.24 X
 5,729,598 3/1998 Kay 379/112 X
 5,764,639 6/1998 Staples et al. 379/93.02

[21] **Appl. No.:** 08/825,206[22] **Filed:** Mar. 27, 1997[51] **Int. Cl.**⁷ H04M 3/42[52] **U.S. Cl.** 379/211; 379/93.02; 379/212; 379/214[58] **Field of Search** 379/210, 211, 379/219, 220, 93.02, 93.03[56] **References Cited****U.S. PATENT DOCUMENTS**

5,434,906 7/1995 Robinson et al. 379/88.23 X

Primary Examiner—Creighton Smith*Attorney, Agent, or Firm*—Graybeal Jackson Haley LLP[57] **ABSTRACT**

A method and device for managing a telecommunication system, including call forwarding, with a computer network (LAN, WAN, etc.) integrated with a private branch exchange (PBX) connected to a Public Switched Telephone Network (PSTN). Calls are forwarded based upon the device used to log onto the computer network by the called party.

41 Claims, 5 Drawing Sheets

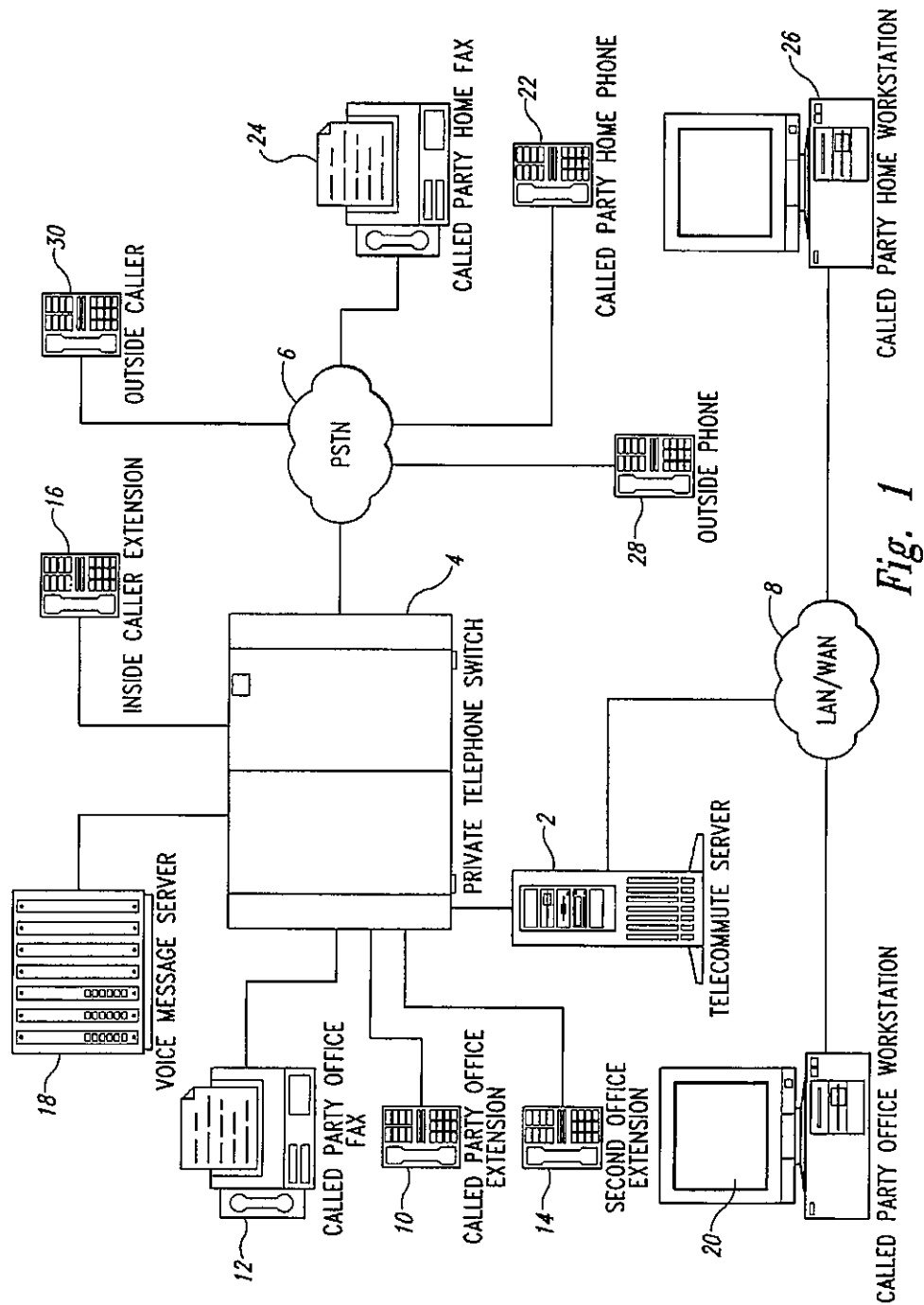
ABS01256134

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Sheet 1 of 5

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Sheet 2 of 5

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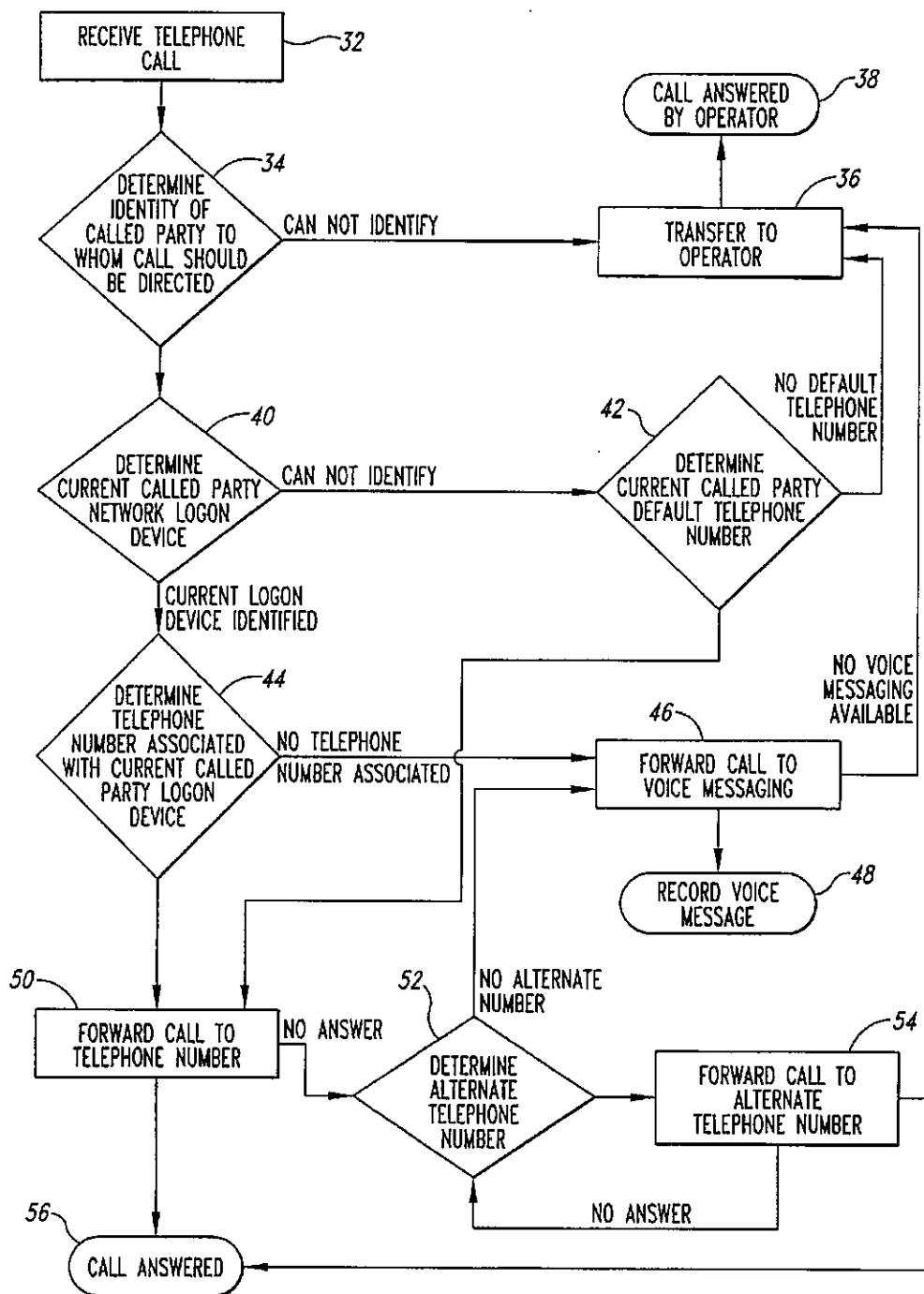


Fig. 2

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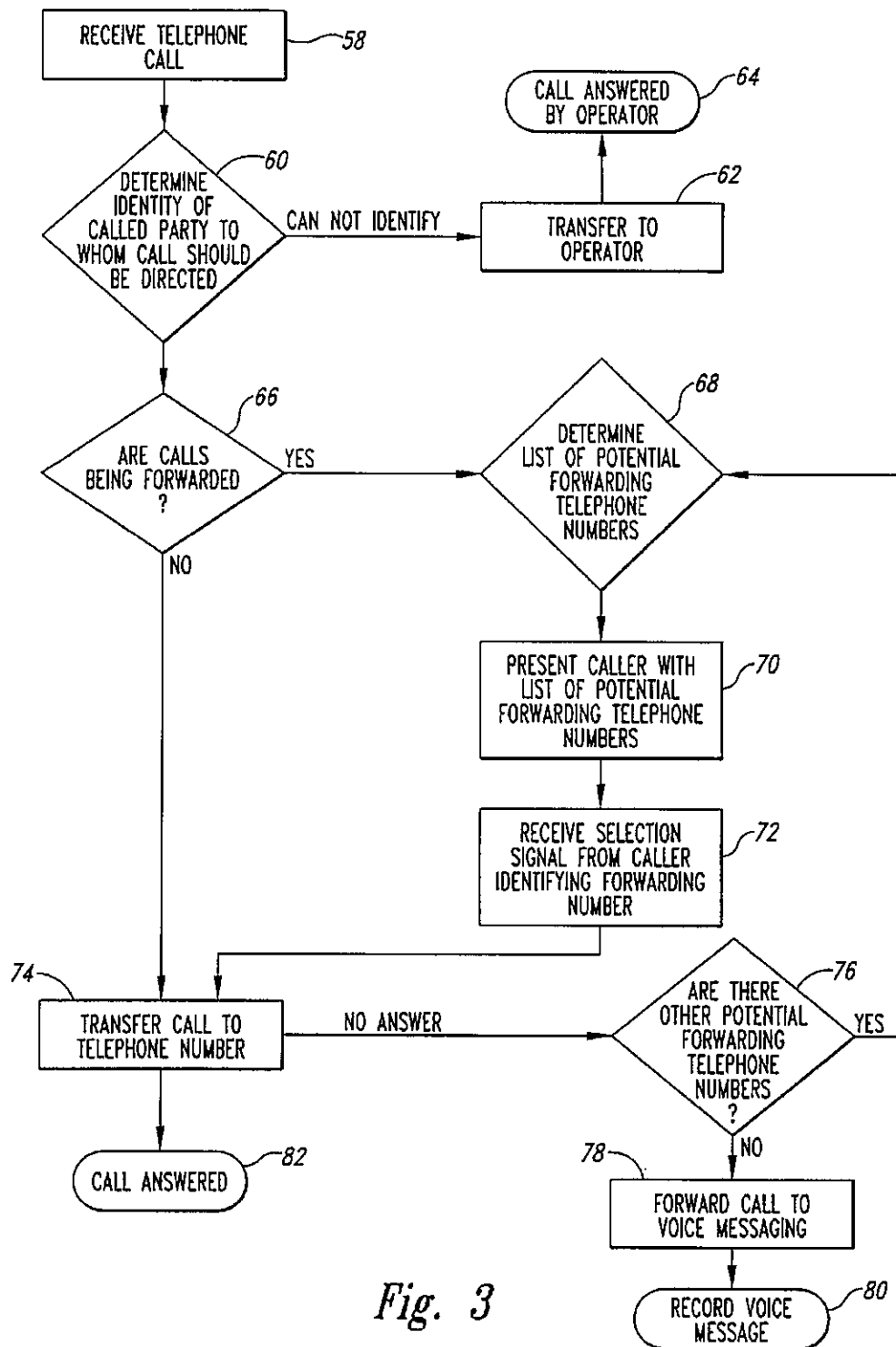


Fig. 3

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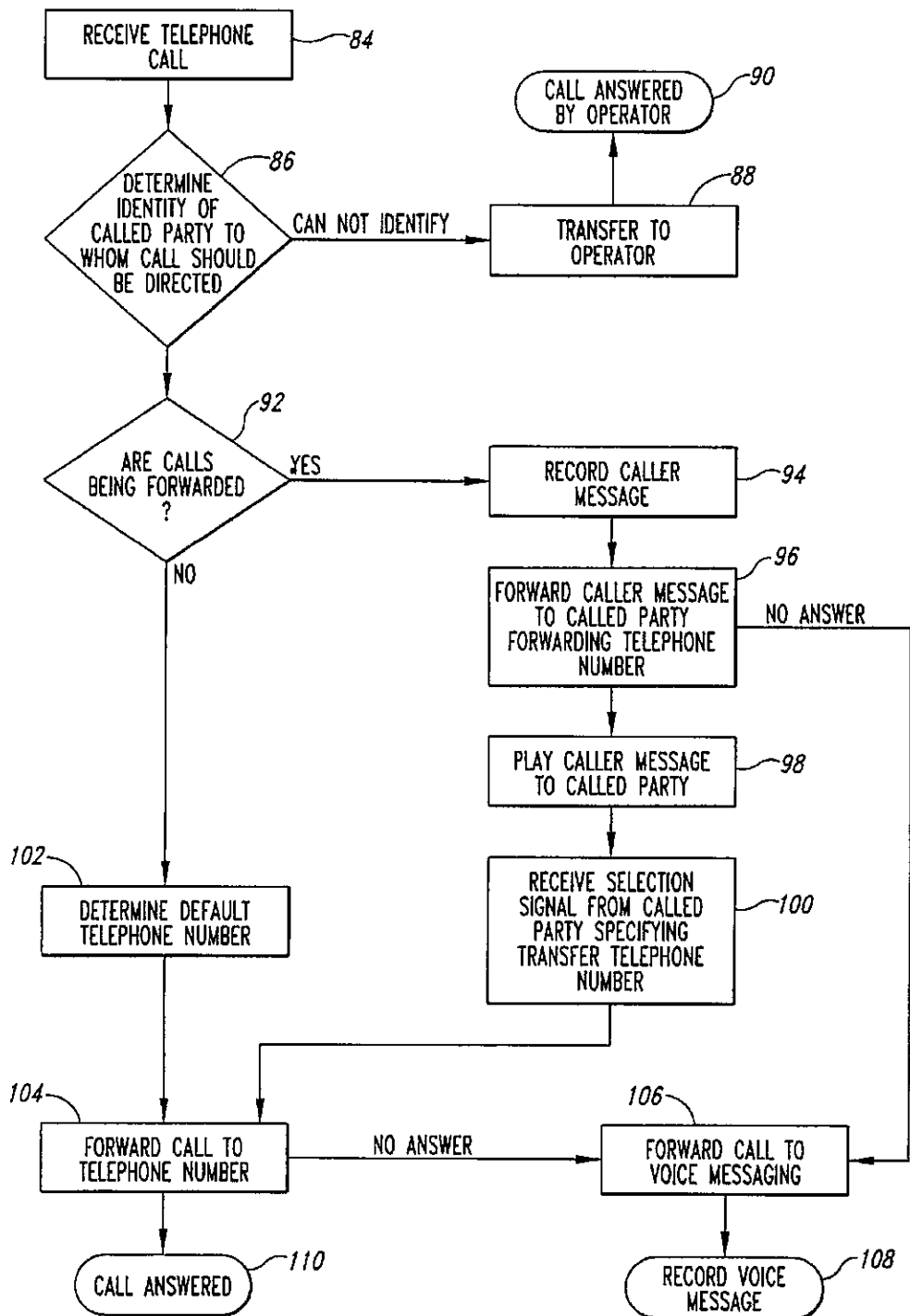


Fig. 4

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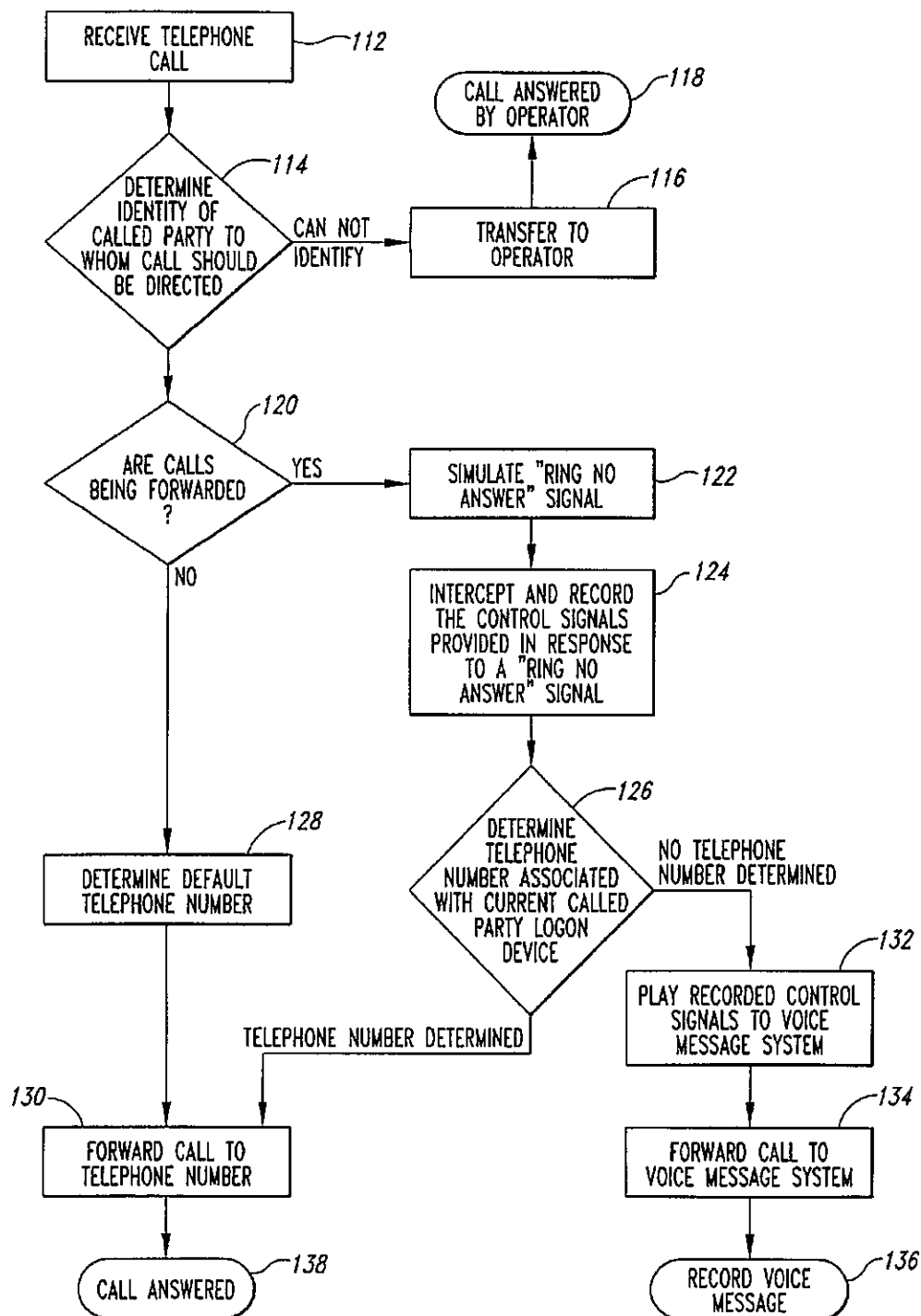


Fig. 5

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TELECOMMUTE SERVER**FIELD OF THE INVENTION**

The present invention relates generally to a system for managing a telecommunications system, and more particularly to a telecommunications management system which controls call forwarding based upon user activity on an associated computer terminal.

BACKGROUND OF THE INVENTION

Telecommuting is the substitution of telecommunications technology for the trip to and from the primary workplace. Computers, cellular phones, voice messaging, fax machines, and advanced communications links such as Integrated Services Digital Network (ISDN) and dial-up access have removed the barriers that once required workers to be in their offices. Telecommuting applies to employees working at home, employees working from a satellite office, and employees working "on the road".

The potential advantages of telecommuting are numerous and varied. Beyond the obvious advantages such as reduced rush hour traffic and enhanced air quality, there are a number of less obvious advantages such as increased employee productivity and expanded geographic range. Additionally, total office space requirements can be reduced when employees work at home, satellite offices can be established with lower overhead and are possible in areas that would have been geographically prohibitive, and emergency preparedness is improved through the decentralization of resources.

The Local-Area Network (LAN) is fast becoming the technology backbone of today's offices, since more and more computing and information resources are based on the LAN. Office workers who come to rely on easy LAN access need the same kind of access when they are working away from the office.

While electronic mail grows in popularity, the telephone and accompanying voice messaging systems are still a necessary part of the modern business environment. Computer and telephone systems are being linked through Computer Telephony Integration (CTI) applications which facilitate incoming and outgoing call handling and control.

CTI applications can be used to seamlessly interface the caller, the called party, and information on a host computer for a variety of applications. CTI applications deliver caller ID, automatic number identification (ANI), dialed number identification services (DNIS), and interactive voice response (IVR) dialed digits, such as a customer's account number, to a software application. CTI applications can also deliver request signals, such as "hold call" or "transfer call", to a telephone system.

Numerous prior art systems allow employees to access a Local Area Network via a remote dialup. Once connected they can access most of the resources of the LAN as if they were in the office. However, since the telephone they are using is not part of the office phone system they are cut off from the bulk of the CTI application functions they have available to them at the office. Some systems may allow them to listen to voice mail, however they are no longer able to use any applications which require them to have access to a telephone connected to the office telephone system. Other prior art systems allow employees to remotely access voice messaging and set call forwarding through the use of Dual Tone Multi Frequency (DTMF) tones from a touch tone phone.

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In most prior art systems, the lack of integration between a company's telephone system and LAN means that an employee has to call in to the company's phone system to check their voice messaging, manually set call forwarding, and then remotely log on to the company's LAN. After call forwarding is set up, people calling the employee will have lost the ability to leave voice messaging or the employee will have to continue to call in to check their voice messaging. After logging off the LAN, the employee must remember to call into the company's telephone system to discontinue call forwarding. Furthermore, there are numerous telephone systems which do not even afford this level of connectivity, which in turn makes telecommuting a less viable alternative.

In order for a company and its employees to obtain the fullest benefit from telecommuting, communications between telecommuting employees, the primary office, and the outside world must be managed efficiently. The management of telecommunications resources extends to telephone and data communications alike. There is a need for a telecommunications management system which closely integrates a company's LAN with its telephone network and makes the same CTI application functions available to an employee whether they are in the office or working from a remote location.

The present invention closely integrates a company's LAN with its telephone network and controls call forwarding based upon user activity on an associated computer terminal. The present invention extends the functionality of the office telephone system to whatever phone the employee has available at a remote location.

SUMMARY OF THE INVENTION

The present invention, referred to as a telecommute server, is a method for controlling call forwarding using a computer connected to a data network and a telephone network. The call is forwarded based upon whether or not the called party is logged onto the data network. The forwarded call is directed to a telephone line associated with the terminal from which the called party is logged on. The called party may be associated with a particular extension and calls directed to that extension will ring through to the phone associated with the computer the called party is currently logged onto.

Call forwarding is terminated when the called party logs off or the connection is broken. The called party may instruct the system to continue call forwarding for a specified amount of time after a disconnection or they log off. Call forwarding may also be scheduled for a predefined period of time after an initial logon regardless of whether the computer is logged on or off.

Call forwarding based on computer logon may be further scheduled so that calls are forwarded to different telephone lines associated with telephones or voice messaging systems depending upon a predefined schedule. Alternatively, call forwarding may be made conditional based upon other information received by the telephone system, such as caller ID or ANI. The system can also be set up to alter the schedule if it detects that the called party is logged onto a terminal associated with a different telephone extension than the one defined in the schedule.

Logging on to the data network may cause more than one phone line to be forwarded. By way of example, logging on from a computer at home may cause voice phone calls to be forwarded to one telephone line associated with the called party's home and fax calls directed to a particular fax machine to be forwarded to another location. Also, the type

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of connection used to log on may serve to identify which extension the calls should be forwarded to.

Calls may originate from outside or from within the company and may be forwarded within the company or to an outside line. This is an important feature of the invention because it makes employees just as accessible as they would be if they were at their desk in the employer's office.

Another aspect of the present invention provides a method for controlling call forwarding by providing the caller with the option of trying the called party at a second location if they are not available at a first location.

In one embodiment, the caller may be provided with a list of locations, any of which can be selected by the caller and tried in order to locate the called party. The list may be modified by the day of the week, the time of day, or whether or not the called party is currently logged on from a remote location. The list may also offer the caller the option to have the call forwarded to a third party.

Additionally, the system may also provide different callers with different levels of access to call forwarding options. Callers may be identified through "caller ID", inputting an identifying code via the telephone touchpad, or some other method of identification. Unknown or low priority callers may only be given the option of leaving a message or having the call transferred to another party while a higher priority caller may be given the option of trying to reach the called party at home.

The system may also be set up to record a message from the caller to be played to a remote called party as part of determining how best to forward the call. The call forwarding options may be automatic or may be presented to the caller or the called party in the form of a menu. The menu may be presented audibly over the phone line or it may be presented in list form on a display. The display may either be part of a communications device or a separate computer display.

The system of the present invention may also be used in conjunction with a Network Switch Server (NSS) which would give the caller the ability to respond to a call forwarding option menu from a computer terminal via a data network.

The present invention also includes a call progress manager which controls the protocols used to forward a call depending upon where the call originated and where it was forwarded to. Progress tones such as busy, trunk busy (reorder), ring no answer, answered by human, answered by machine, are managed. The present invention generates the necessary control signals to respond to the progress tones generated by the outside telephone network.

The system of the present invention can distinguish between internal extensions, outside lines, cell phones, Internet voice, and 2 way pagers. For example, on internal calls when there is "no answer", the system can be instructed to intercept for remote presence determination and ring at remote location while calls from outside the company are sent to a voice messaging system. Remote presence determination includes checking to see if the party being called is logged onto the data network or if they have scheduled to have calls forwarded at this time.

The present invention, a telecommute server, can either be integrated into a system which includes voice messaging or may be used as a stand-alone system which can be connected to a separate voice messaging system. The telecommute server intercepts incoming calls which would be forwarded to voice mail because of a "ring no answer" progress tone, records the DTMF tones which would be provided to the

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voice messaging system, and checks to see if there is an alternative line to which the call should be forwarded. If there is no alternative line to which the call should be forwarded, the system telecommute server passes the call onto the voice messaging system. If there is a line to which the call should be forwarded, the telecommute server forwards the call to the specified line. If there is no answer at the forwarded number, the Telecommute Server transfers the call back to the voice messaging system and plays the earlier recorded DTMF tones to the voice messaging system. The voice messaging system then answers the call as it would have without the presence of the telecommute server. The telecommute server can, through recording the DTMF tones, control any DTMF controlled device. The system can be implemented so as to work with any prior art device whether it uses in-band or outband signaling.

These and other features of the present invention will be more fully appreciated when considered in light of the following detailed description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a functional diagram of the present invention.

FIG. 2 is a flowchart of the method of the present invention.

FIG. 3 is a flowchart of the method of the present invention.

FIG. 4 is a flowchart of the method of the present invention.

FIG. 5 is a flowchart of the method of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows the telecommute server 2 connected to a computer network 8 and a private telephone switch (private branch exchange (PBX)) 4 which in turn is connected to a Publicly Switched Telephone Network (PSTN) 6. A called party office extension 10, a called party office fax machine 12, a second office extension 14, an inside caller extension 16, and a voice messaging system 18 are also connected to the PBX 4. A called party office workstation 20 is connected to the computer network 8. Called party home phone 22, called party home fax 24, outside phone 28, and outside caller 30 are all connected to PSTN 6. A called party home workstation 26 is connected to the computer network 8.

When an outside caller 30 places a call on the PSTN 6 the call is directed to the called party office extension 10 by the private branch exchange 4. Before the PBX sends the call to the called party office extension 10, the telecommute server 2 checks the computer network 8 to see if the called party is logged on. If the called party is logged on, the telecommute server 2 instructs the private branch exchange 4 to forward the call to the telephone extension associated with the device the called party has used to log onto the computer network 8.

If the called party was logged onto the computer network 8 from the called party office workstation 20, then the call would be directed to the called party office extension 10. If the called party were logged onto the computer network 8 from the called party home workstation 26, then the telecommute server 2 would instruct the PBX 4 to forward the call to called party home phone 22. The telecommute server 2 selects the telephone number to which incoming calls should be forwarded based upon a record stored in a memory which associates a forwarding telephone number, such as the

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number for called party home phone 22, with a network logon device, such as called party home workstation 26.

If the connection between the network logon device, called party home workstation 26 or called party office workstation 20, and the computer network 8 is interrupted, intentionally (via a logoff) or accidentally (via a disconnect), the telecommute server 2 can continue to forward calls for a specified period of time after a disconnect or logoff. Alternatively, the telecommute server 2 can continue to forward calls to a previously associated telephone number for a specified period of time after a disconnect but forward calls to another telephone number or a voice message system after the called party logs off. The telecommute server 2 may either have the call forwarding preferences preprogrammed into it or the forwarding preferences may be entered by the called party when he/she logs onto or off of the computer network 8.

The telecommute server 2, can also forward incoming calls based upon other criteria including day or date, time of day, the identity of the caller, or any preprogrammed set of rules. It is within the scope of the invention for the telecommute server 2 to utilize a set of forwarding preferences which are based the above criteria as well as other factors such as who else in the office is logged onto the computer network 8 or the telephone extensions currently in use.

If the called party is not currently logged onto the computer network 8, the telecommute server 2 will instruct the PBX 4 to direct the call to a default telephone number. In most instances, the called party office extension 10 will be the default telephone number. If the called party office extension 10 is not answered (generating a "ring no answer" signal), the PBX 4 may forward the call to a voice messaging system 18. Alternatively, the telecommute server 2 may instruct the PBX 4 to send the incoming call to a voice messaging system 18 if the called party is not logged onto the computer network 8.

In another embodiment of the present invention, the telecommute server 2 will be used with a voice messaging system 18 that requires information, in the form of control signals, from the PSTN 6 or PBX 4. When the telecommute server intercepts an incoming call to check if the called party is logged onto the computer network 8, it also records any control signals that would normally be provided to the voice messaging system from the PBX 4 or PSTN 6. If the telecommute server identifies that the called party is logged on, then it will forward the call to the appropriate telephone number. If the call is forwarded to a telephone number and there is no answer, then the telecommute server 2 plays the appropriate control signals to the voice messaging system 18.

The telecommute server 2 can also be set up to present a caller with a menu listing locations to which the call can be forwarded. The caller then selects a location, most likely using the telephone touchpad, and the telecommute server forwards the call to the selected location. If there is no answer, the telecommute server 2 can either transfer the call to a voice messaging system 18 or try another location. The menu presented to the caller may be modified based upon whether or not the called party is logged onto the computer network 8, time of day, day or date, or the caller's identity.

In another embodiment, the telecommute server 2 can ask the caller to record a message for the called party. The message is then forwarded to and played for the called party. The called party is then presented with a menu which allows him to take the call, record a message to be played for the calling party, transfer the call to a voice messaging system,

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or transfer the call to another telephone number. The options available to the called party may be modified based upon whether or not the called party is logged onto the computer network 8, time of day, day or date, or the caller's identity.

FIGS. 2-5 illustrate the methods embodied by the present invention. Reference numerals below refers to described steps in the method, not to any noun that they happen to follow.

In FIG. 2 a telephone call is received 32 and the identity of the called party is determined 34. If the called party can not be identified, the call is transferred to an operator 36 and the call is answered by an operator 38.

The identity of the called party is determined 34 by looking up the dialed extension in an index stored in a computer memory and storing the identity of the associated called party stored in a memory. If the identity of the called party is determined, then the next step is to determine the current called party network logon device 40. The current called party network logon device is determined 40 by comparing identity of the called party, which is stored in a memory, with a list of persons currently logged onto the computer network and the network identifier for the device with which they logged on to the computer network.

If no current logon device is identified, then the current called party default telephone number is determined 42 by comparing the identity of the called party, stored in a memory, with a list of default telephone numbers indexed by called party. If no default telephone number is available then the call is transferred to the operator 36 and the call is answered by an operator 38. If a default telephone number is determined 42 then the call is forwarded to the telephone number 50 and the call is answered 56.

If the current called party network logon device is determined then the telephone number associated with the current called party network logon device is determined 44 by comparing the identity of the logon device with a list of telephone numbers indexed by logon device stored in a memory. Other factors including time of day, day of the week, date, and/or the identity of the calling party may be used to determine the forwarding number by providing additional indexing criteria. The call is then forwarded to the identified telephone number 50. If no telephone number is associated with the current logon device, then the call is forwarded to a voice messaging system 46 and a message is recorded 48.

If the forwarded call is not answered, then an alternate forwarding number is determined 52 and the call is forwarded to the alternate telephone number 54. The alternate forwarding number is determined 52 in the same fashion as the telephone number associated with the current called party network logon device is determined 44 and additional factors may apply to the determination of the telephone number to which the call should be forwarded. If there is no answer, then a second alternative forwarding number will be identified 52 and the call is forwarded 54 to the second alternative forwarding number. If there is no alternative forwarding number available, the call is forwarded to a voice messaging system 46 and a message is recorded 48.

In FIG. 3 a telephone call is received 58 and the identity of the called party is determined 60. If the called party can not be identified, the call is transferred to an operator 62 and the call is answered by an operator 64.

If the called party is identified, then the system checks to see if calls are being forwarded 66. If calls are being forwarded, then a list of potential forwarding numbers will be determined 68. The list of potential forwarding numbers

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can be based on one or more preprogrammed criteria, including the identity of the called party's current or most recent network logon device, day of the week, date, time of day, and/or the identity of the caller. The caller is then presented with a list of potential forwarding telephone numbers. These numbers may be presented as locations ("home phone, car phone, cell phone") or the caller may be offered options to "try another location or leave a message". As discussed above, different lists may be presented to different callers based on their identity or the source of origin of their call, and the lists of potential forwarding numbers may be effected by the time of day or other criteria. The caller then selects the telephone number (location) they want the call forwarded to. This selection may be made by pressing a key on the telephone keypad or speaking the selection into the receiver or, if the caller is connected via computer-telephone integration, by selecting a screen item with a mouse or pressing a key. The selection signal is received 72 and the call is transferred to the telephone number associated with the selection signal 74.

If calls are not being forwarded 66, then the call is transferred 74 to the originally dialed telephone number or the extension to which a PBX had transferred the call.

If there is no answer at the originally dialed telephone number, then the call will be forwarded to voice messaging 78 and a message will be recorded 80. If there is no answer at a forwarded telephone number, then other potential forwarding numbers will be identified 76. If there are other potential forwarding numbers, then a second list of potential forwarding numbers will be determined 68 and presented to the caller 70 and the forwarding process will be repeated. If there are no other potential forwarding telephone numbers or calls are not being forwarded, then the call will be forwarded to a voice messaging system 78 and a message recorded 80.

In FIG. 4 a telephone call is received 84 and the identity of the called party is determined 86. If the called party can not be identified, the call is transferred to an operator 88 and the call is answered by an operator 90.

If the called party is identified, then the system checks to see if calls are being forwarded 92. If calls are being forwarded, then a voice message from the caller is recorded 94. The caller's message is then forwarded to the called party's forwarding telephone number 96. If the telephone is answered, the caller's message is played for the called party 98. A selection signal is received from the called party 100 and the call is transferred to the telephone number associated with the selection signal 104. In the preferred embodiment, the called party is presented with a list of potential forwarding numbers, including transferring the call to the called party or to a voice messaging system. The list of potential forwarding numbers can be based on one or more preprogrammed criteria including the identity of the called party's current or most recent network logon device, day of the week, date, time of day, the source of origin of the call, and/or the identity of the caller.

If calls are not being forwarded 92, then the default telephone number is determined 102 and the call is forwarded to the default number 104. If there is no answer at the called party forwarding number 96 or the telephone number to which a call has been forwarded 104, then the call is forwarded to a voice messaging system 106 and a message is recorded 108.

In FIG. 5 a telephone call is received 112 and the identity of the called party is determined 114. If the called party can not be identified, the call is transferred to an operator 116 and the call is answered by an operator 118.

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If the called party is identified, then the system checks to see if calls are being forwarded 120. If calls are being forwarded, then a "ring no answer" signal is simulated and played back to the telephone network 122. The control signals provided by the telephone network in response to the "ring no answer" signal are intercepted and recorded 124. The signals can be in band DTMF tones, some other in band signalling system, or an out of band signalling system. If out of band tones are used the signalling line must be monitored as well as the communications line. The telephone number associated with the called party's current network logon device is determined 126, and the call is forwarded to that telephone number 130. Alternatively the call could be forwarded to a telephone number based upon some criteria other than the called party's current logon location.

If calls are not being forwarded 120, then the default telephone number is determined 128 and the call is transferred to that number 130. If there is no answer at that number, the prior art voice message system will record a message as usual.

If no forwarding telephone number is determined 126, then the recorded control signals are played to the voice message system 132 and the call is transferred to the voice message system 134. The voice message system responds as if there had been no interruption in the call and records a voice message 136 as if the "ring no answer" control signals had been received directly from the telephone network.

From the foregoing teachings, it can be appreciated by one skilled in the art that a new, novel, and nonobvious telecommunication management system has been disclosed. It is to be understood that numerous alternatives and equivalents will be apparent to those of ordinary skill in the art, given the teachings herein, such that the present invention is not to be limited by the foregoing description but only by the appended claims.

I claim:

1. A method for managing a telecommunications system in which call forwarding is determined by whether a computer terminal is logged into a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining with a server the identity of a called party to whom said call should be directed;
- c) identifying with the server one of a plurality of network logon devices associated with said called party that is logged-on to said computer network;
- d) identifying with the server a telephone number associated with said logged-on network logon device; and
- e) forwarding the call to said telephone number, the forwarded call bypassing the server.

2. The method of claim 1, wherein said call is directed to a voice messaging system if none of said plurality of network logon devices for the called party is identified as logged-on.

3. The method of claim 1, wherein said call is directed to a telephone number associated with the previously logged-on called party network logon device if no currently logged-on network logon device is identified.

4. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers and the determination of which telephone number said call is forwarded to is based upon the date and time said call is received.

5. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers

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and the determination of which telephone number said call is forwarded to is based upon whether said call originated from the publicly switched telephone network or an internal extension.

6. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers and the determination of which telephone number said call is forwarded to is based upon a set of predefined rules.

7. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers and the determination of which telephone number said call is forwarded to is based upon incoming signals accompanying the call which signals identify the calling party.

8. The method of claim 1 wherein the forwarding the call to said telephone number comprises forwarding the call via a publicly switched telephone network.

9. A method for managing a telecommunications system in which call forwarding is determined by whether a computer terminal is logged into a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining the identity of a called party to whom said call should be directed;
- c) determining whether one of a plurality of network logon devices associated with said called party is logged onto said computer network;
- d) if one of the network logon devices is logged onto said computer network, then identifying a telephone number associated with said logged-on network logon device and forwarding the call to said telephone number; and
- e) if none of said plurality of network logon devices is logged onto said computer network, then directing the call to a default telephone number.

10. A method for managing a telecommunications system in which call forwarding is determined by whether a computer terminal is logged into a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining the identity of a called party to whom said call should be directed;
- c) determining whether one of a plurality of network logon devices associated with said called party is logged onto said computer network;
- d) if one of the network logon devices is logged onto said computer network, then identifying a telephone number associated with said logged-on network logon device and forwarding the call to said telephone number; and
- e) if none of said plurality of network logon devices is logged onto said computer network, then directing said call to a telephone number associated with a previously logged-on network logon device for a specified period of time after said previously logged-on network logon device logs off said computer network.

11. A method for managing a telecommunications system in which call forwarding is controlled by a calling party, comprising:

- a) receiving a call from the calling party on a telephone network requesting communications with a called party;
- b) presenting said calling party with a menu listing a plurality of locations to which the call can be forwarded;
- c) receiving a selection signal from said calling party identifying the location to which said call is to be forwarded; and

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d) forwarding said call to a forwarding telephone number associated with said selection signal.

12. The method of claim 11, wherein said menu listing is modified based upon the identity of the calling party.

13. The method of claim 11, wherein said menu listing is modified based upon the time at which the call is received.

14. The method of claim 11, wherein said menu listing is modified based upon the day and date on which the call is received.

15. The method of claim 11, wherein said menu listing includes the option of leaving a message with a voice mail system.

16. The method of claim 11, further comprising the step of:

forwarding said call to a voice messaging system if there is no answer at the telephone number to which the call was forwarded.

17. A method for managing a telecommunications system in which call forwarding is controlled by the called party, comprising:

- a) receiving an indication that calls directed to a first communications device should be forwarded to a second communications device;
- b) receiving a call from a calling party on a telephone network directed to said first communications device;
- c) recording a calling-party message from said calling party;
- d) forwarding said calling-party message to said second communications device;
- e) playing said calling-party message at said second communications device;
- f) receiving a selection signal from said second communications device indicating a third communications device to which said call is to be forwarded; and
- g) forwarding said call to said third communications device.

18. The method of claim 17, wherein said second communications device is selected from a plurality of communications devices based upon the time at which the call is received.

19. The method of claim 17, wherein said second communications device is selected from a plurality of communications devices based upon the day and date on which the call is received.

20. The method of claim 17, wherein said third communications device is an auto attendant system.

21. The method of claim 17, wherein said third communications device is a voice messaging system.

22. The method of claim 17, further comprising the step of:

forwarding said call to a voice messaging system if there is no response from said second communications device.

23. The method of claim 17, further comprising the step of:

presenting at said second communications device a menu listing a plurality of devices to which the call can be forwarded.

24. The method of claim 23, wherein said menu listing is modified based upon the identity of the calling party.

25. The method of claim 23, wherein said menu listing is modified based upon the time at which the call is received.

26. The method of claim 23, wherein said menu listing is modified based upon the day and date on which the call is received.

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27. The method of claim 23, wherein said menu listing includes the option of forwarding the call to a voice mail system.

28. A method for managing a telecommunications system, which includes a voice messaging system, in which call forwarding is determined by whether a computer terminal is logged onto a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining the number of a called party's extension to which said call should be directed;
- c) simulating a "ring no answer" of said extension number by sending a "ring no answer" signal to the telephone system;
- d) intercepting control signals provided by the telephone system to the voice messaging system in response to the "ring no answer" signal;
- e) recording the control signals which are provided by the telephone system to the voice messaging system in response to the "ring no answer" signal;
- f) identifying which one of a plurality of network logon devices associated with said called party is logged-on to said computer network;
- g) if no network logon device for the called party is identified as logged-on, playing the control signals to the voice messaging system, in order to transfer the call to said voice messaging system;
- h) if a network logon device is identified as logged-on, identifying a telephone number associated with said network logon device and forwarding the call to said telephone number.

29. The method of claim 28, wherein said call is directed to a default telephone number if none of said plurality of network logon devices for the called party is identified as logged-on.

30. The method of claim 28, wherein said call is directed to a telephone number associated with the previously logged on called party network logon device if no currently logged on network logon device is identified.

31. The method of claim 28, wherein said call is directed to a telephone number associated with the previously logged on called party network logon device for a specified period of time after said network logon device logs off the network if no currently logged-on network logon device is identified.

32. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon the date and time said call is received.

33. The method of claim 28, wherein said call is forwarded to one a plurality of telephone numbers based upon whether said call originated from the publicly switched telephone network.

34. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon a set of predefined rules.

35. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon the identity of the calling party.

36. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party and that includes a telephone system coupled to a publicly switched telephone network, the server operable to:

- a) receive information from the telephone system regarding an incoming call directed to the called party;
- b) identify the called party from the information;

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c) identify one of the network logon devices that is logged onto the computer network;

d) identify a telephone number associated with the logged-on network logon device; and

e) control the telephone system to forward the call to the telephone number, the forwarded call bypassing the server.

37. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party and that includes a telephone system, the server operable to:

- a) receive information from the telephone system regarding an incoming telephone call directed to the called party;
- b) identify the called party from the information;
- c) determine whether one of the network logon devices is logged onto the computer network;
- d) if one of the network logon devices is logged onto the computer network, then identify a telephone number associated with the logged-on network logon device and control the telephone system to forward the call to the telephone number; and

e) if none of the network logon devices are logged onto the computer network, then control the telephone system to forward the call to a default telephone number.

38. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party and that includes a telephone system, the server operable to:

- a) receive information from the telephone system regarding an incoming telephone call directed to the called party;
- b) identify the called party from the information;
- c) determine whether one of the network logon devices is logged onto the computer network;
- d) if one of the network logon devices is logged onto the computer network, then identify a telephone number associated with the logged-on network logon device and control the telephone system to forward the call to the telephone number; and

e) if none of the network logon devices is logged onto the computer network and if the most recently logged-on network logon device has been logged off the computer network for no longer than a predetermined time, then direct the call to a telephone number associated with the most recently logged-on network logon device.

39. A server for managing a telecommunications system that includes a telephone system, the server operable to:

- a) receive information from the telephone system regarding an incoming telephone call from a calling party, the call directed to a called party;
- b) present the calling party with a menu listing a plurality of locations to which the call can be forwarded;
- c) receive from the calling party a selection signal identifying the location to which the call is to be forwarded; and
- d) control the telephone system to forward the call to a telephone number associated with the identified location.

40. A server for managing a telecommunications system that includes a telephone system, the server operable to:

- a) receive an indication that the telephone system is to forward calls directed to a first communications device to a second communications device;

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- b) receive information from the telephone system regarding an incoming telephone call from a calling party, the call directed to the first communications device;
 - c) record a calling-party message from the calling party;
 - d) control the telephone system to forward the calling-party message to the second communications device;
 - e) play the calling-party message at the second communications device;
 - f) receive a selection signal from the second communications device indicating that the call is to be forwarded to a third communications device; and
 - g) control the telephone system to forward the call to the third communications device.
41. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party, a telephone system, and a voice messaging system coupled to the telephone system, the server operable to:
- a) receive information from the telephone system regarding an incoming telephone call directed to the called party;

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- b) determine the called party's telephone number to which the call is to be directed;
- c) simulate a "ring no answer" of the telephone number by sending a "ring no answer" signal to the telephone system;
- d) intercept control signals provided by the telephone system to the voice messaging system in response to the "ring no answer" signal;
- e) record the intercepted control signals;
- f) determine whether one of the network logon devices is logged onto the computer network;
- g) if no network logon device is logged-on, then transfer the call to the voice messaging system by playing the recorded control signals to the voice messaging system; and
- h) if a network logon device is logged-on, then identify a forwarding telephone number associated with the network logon device and control the telephone system to forward the call to the forwarding telephone number.

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